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DURUM WHEAT QUALITY REPORT

Physical, Chemical, Milling, and Spaghetti Characteristics

United States Department of Agriculture
Agricultural Research Service
North Central Region



DURUM WHEAT QUALITY REPORT

on samples received from the 1992 crop

Source:

**Spring and Durum Wheat Quality Laboratory
USDA, Agricultural Research Service
Harris Hall, NDSU
Fargo, North Dakota 58105**

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
in cooperation with
STATE AGRICULTURAL EXPERIMENT STATION

QUALITY EVALUATION OF DURUM WHEAT CULTIVARS

1992 CROP^{1/}

by

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- 1/ This report represents cooperative investigations on the quality of Durum wheat cultivars from the 1992 crop. Some of the results presented have not been sufficiently confirmed to justify varietal release. Confirmed results will be published through established channels. Cooperators submitting samples for analysis have been given analytical data on their samples prior to release of this report. The report is primarily a tool for use by cooperators and their official staff and by those individuals having direct and special interest in the development of agricultural research programs.

This report was compiled by the Agricultural Research Service, U. S. Department of Agriculture. Special acknowledgment is made to the North Dakota State University for use of their facilities and the services provided in support of these studies. The report is not intended for publication and should not be referenced in either literature citations or quoted in publicity and advertising. Use of the data may be granted for certain purposes upon written request to the agency or agencies involved.

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INTRODUCTION

The twenty-ninth Durum Wheat Quality Report contains data for the 1992 crop. Samples of standard cultivars and new selections of durum wheat grown in cooperative experiments in the durum wheat regions of the United States were milled and evaluated by the Hard Red Spring and Durum Wheat Quality Laboratory in cooperation with the Department of Cereal Science and Food Technology on the campus of North Dakota State University, Fargo, ND. Methods and techniques are described in detail in the text of the report.

Durum wheat samples of at least 2 kg were milled in a Buhler experimental mill, or macro procedure, and further processed into spaghetti. Smaller wheat samples were milled using the micro procedure and were not processed into spaghetti. Although, small samples having acceptable kernel characteristics and dust color scores, if possible, should be included in the macro procedure the following year.

The purpose of this report is to make available to cooperators the quality data on standard cultivars and new selections of durum wheat from the 1992 crop.

This report was developed by the Agricultural Research Service, U. S. Department of Agriculture. Credits are acknowledged to the North Dakota State University for use of their facilities and for services rendered in support of these studies. The report is not intended for publication and should not be reprinted in any or various contents or quoted in publicity and advertising. Use of the data may be granted for certain purposes upon written request to the agency or agencies involved.

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SOURCE OF THE 1992 CROP SAMPLES

Tests were performed on 651 samples from 19 stations in seven states (California, Oregon, Arizona, North Dakota, Montana, Minnesota, and South Dakota). Data presented in this report are from the Field Plot Nursery, Uniform Regional Nursery, Advanced Nursery, and Preliminary samples. Special Nursery are not reported since they were of special interest only to a breeder.

FIELD PLOTS - 29

Minot, Oaks, Langdon and Fargo, North Dakota

UNIFORM REGIONAL NURSERY - 376

Day County and Selby - South Dakota

Crookston and Morris - Minnesota

Bozeman and Sidney - Montana

Dickinson, Carrington, Williston, Minot,

Langdon, and Prosper - North Dakota

ADVANCED NURSERY - 102

Imperial Valley and Davis - California

Pendleton - Oregon

PRELIMINARY - 117

Pendleton - Oregon

Tulelake - California

SPECIAL NURSERY - 27

Yuma - Arizona

1992 UNIFORM REGIONAL DURUM NURSERY

LIST OF ENTRIES

Entry No.	Entry	Pedigree	P. I. No.	Origin
1	MINDUM		5296	MN
2	STOA			ND-USDA
3	WARD		15892	ND-USDA
4	RUGBY		17284	ND-USDA
5	VIC		17789	ND-USDA
6	LLOYD		476211	ND-USDA
7	MONROE		478289	ND-USDA
8	RENVILLE		510696	ND-USDA
9	MEDORA			ND-USDA
10	SCEPTRE			U.SASK.
11	D8460	D8030/D8016		ND-USDA
12	D86398	MONROE/D8019		ND-USDA
13	D86741	RSPC1S2-227/D8292		ND-USDA
14	D87121	D8024/MONROE		ND-USDA
15	D87122	D8024/MONROE		ND-USDA
16	D87130	D8024/MONROE		ND-USDA
17	D87141	D8019/D7958		ND-USDA
18	D87240	D7798/DT367		ND-USDA
19	D87436	W85 GH-227/D804		ND-USDA
20	D87450	D82104/AUST#820198//D82108		ND-USDA
21	D88058	D8279/D7925		ND-USDA
22	D88273	D8189/D81141		ND-USDA
23	D88277	D8189/D81141		ND-USDA
24	D88284	D8189/D81141		ND-USDA
25	D88289	D8189/D81141		ND-USDA
26	D88303	D82106/D8179		ND-USDA
27	D88450	JO'S'/CR'S'//D.COL.01/3/ DOMIL/4/D8288/5/D8261		ND-USDA
28	D88758	HD81-485/D81104		ND-USDA
29	D88793	D81170/D8177		ND-USDA
30	D86-1523	STOCKHOLM/EDMORE		AGRIPRO
31	D86-1534	VIC/LLOYD		AGRIPRO

METHODS

Methods used in testing samples were essentially the same as provided in the previous report.

Briefly, the following methods and terminologies were applied:

Test Weight Per Bushel - The weight per Winchester bushel of dockage-free wheat subsequent to passing the sample through a Carter-Day dockage tester^{4/}.

Thousand Kernel Weight - The 1000 kernel weight was determined from a 10 gm sample of cleaned, hand-picked wheat using a Seedburo Seed Counter^{4/}.

Kernel Size - The percentage of the size of the kernels [large, medium, and small] was determined on a wheat sizer as described by Shuey^{5/}.

The sieves of the sizer were clothed as follows:

Top Sieve - Tyler # 7 with 2.92 mm opening
Middle Sieve - Tyler # 9 with 2.24 mm opening
Bottom Sieve - Tyler #12 with 1.65 mm opening

Protein Content - Both the Leco FP-428 Nitrogen Determinator and the near infrared technique were used to determine protein content. Nitrogen values, as determined by the Leco FP-428 Nitrogen Determinator procedure, were multiplied by 5.7 to calculate protein values.

Hardness Test - The procedure (AACC Method 39-70A) requires grinding durum wheat samples with a UDY grinder, and obtaining data from a Technicon 450 near infrared analyzer. Wavelengths used were 1680 nm and 2230 nm. This procedure was developed by Mr. Karl Norris, USDA, Beltsville through a collaborative research project in which this Laboratory also participated. Durum wheat hardness scores for the 1992 crop ranged

^{4/} Mention of a trademark name or proprietary product does not constitute a guarantee or warranty of the product by the U. S. Department of Agriculture, and does not imply its approval to the exclusion of other products that may also be suitable.

^{5/} Shuey, William C. A wheat sizing technique for predicting flour milling yield. Cereal Sci. Today 5:71 (1960).

from a low of 66 to a high of 133 with an average of 109.

Milling - All samples were cleaned by passing the wheat through a Carter-Day dockage tester and through a modified Forster scourer Model 6. The clean, dry wheat from the larger 2 kg samples was tempered in three stages: first to 12.5% moisture at least 72 hours prior to the second stage; second, an increase of 2.0% moisture to a cumulative moisture of 14.5% for 18 hours; and third, an increase of 3.0% moisture to a cumulative moisture content of 17.5%, 45 minutes prior to milling. The smaller 200 gram samples were pretempered to 12.5% moisture for at least 72 hours. Following, they were tempered to 16.5% moisture and allowed to stand overnight prior to milling.

Samples from the Field Plot, Preliminary, Special, and Advanced Nurseries were milled in a Buhler experimental mill specially designed for milling durum wheat. The mill is equipped with corrugated rolls throughout, and the semolina is purified on a Miag laboratory purifier. All stock is handled pneumatically. The mill flow is shown on page 9. Prior to milling, the Buhler mill and purifiers were adjusted to maximize semolina yield, yet keep the speck count to an acceptable level.

Samples from the Uniform, and Special Nurseries were milled in a Brabender Quadrumat Junior mill equipped with #24GG on the drum sieve. The flow diagram of this system is shown on page 10. The unpurified semolina was rebolted for 30 sec on a strand sifter equipped with a U.S. #35 Tyler sieve. The throughs of the #35 Tyler sieve were classified as rebolted semolina. The overs of the #35 Tyler sieve were reground and sieved again for 30 seconds. The throughs were combined with the first sieving, and the combined semolina represented the material tested. The overs of the #35 Tyler sieve were classified as crude shorts, and overs of the rotating #24GG sieve were classified as bran.

Semolina Extraction - For both the macro and micro method of milling, the percent semolina extraction was calculated on a total product basis.

Speck Count - The number of specks was determined from three separate one-inch square areas of semolina enclosed by a special glass and frame. Any materials other than pure endosperm chunks, such as bran particles, were considered specks. The average of three readings was converted to the number of specks per 10 sq in (speck count). Speck count is determined only on the macro milled samples.

Mixograph Analysis - Mixing properties were determined from a constant weight of semolina (10 g, mb) and water (6.0 ml).

Mixogram Pattern - The reference mixograms shown on page 24 illustrate different types of mixogram patterns. A single number is assigned each pattern to classify the curves. Larger numbers indicate stronger mixing characteristics.

Color Score - The color of the spaghetti or semolina has generally been accepted as the most important single grading factor. A deep amber or golden color is most preferable. The amount of yellow pigmentation determines the color.

Cooked Weight - Weight of cooked spaghetti determined after cooking, rinsing, and draining.

The diagram illustrates the flour mill process, starting with **TEMPERED WHEAT** and ending with **Flour**, **BRAN**, and **Semo** (Semolina).

Initial Processing:

- Tempered Wheat (10, 2:1):** Flows into a bin (1190, 188) and then to **Purifier #1**.
- Wheat (18, 2:1):** Flows into a bin (978, 188) and then to **Purifier #1**.
- Wheat (28, 2:1):** Flows into a bin (869, 188) and then to **Purifier #1**.
- Wheat (22, 2:1):** Flows into a bin (716, 130) and then to **Purifier #1**.
- Wheat (4, 2:1):** Flows into a bin (405, 130) and then to **Purifier #1**.
- Wheat (5, 2:1):** Flows into a bin (368, 130) and then to **Purifier #1**.

Purifier #1:

335	355	375	900
259	269	315	335

SHORTS: 335, 315

Purifier #2:

355	414	425	750
315	355	400	530

Semo: 315, 400, 530

Purifier #3:

500	530	560	780
400	450	530	670

SHORTS: 400, 530

Purifier #4:

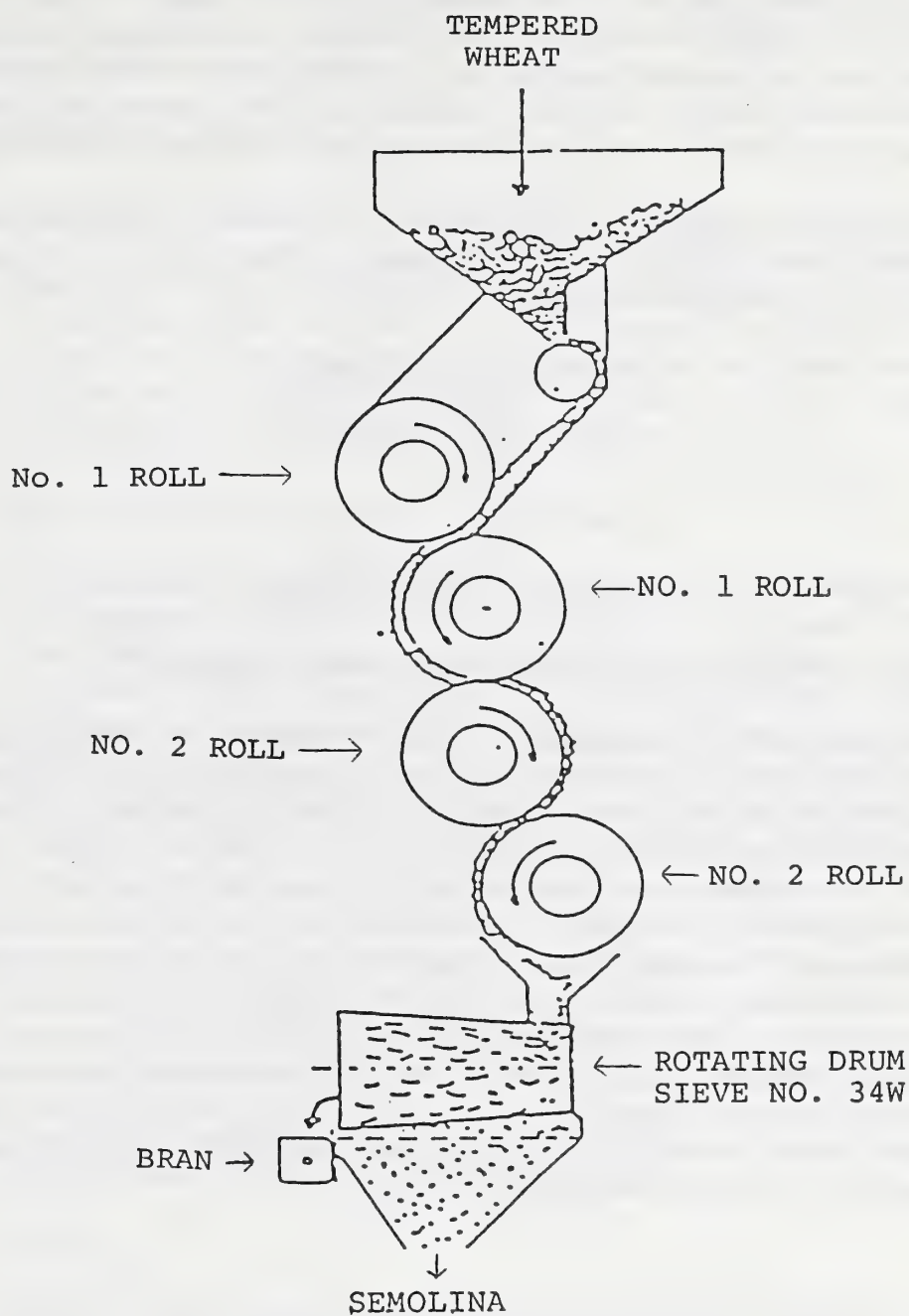
475	500	560	630
425	450	530	600

Semo: 425, 530, 600

Final Products:

- Flour:** 1190, 978, 869, 716, 405, 368
- BRAN:** 130, 130, 130, 130, 130, 130
- Semo:** 315, 400, 530, 425, 530, 600

FLOW DIAGRAM FOR SMALL DURUM WHEAT SAMPLES
MICRO PROCEDURE



REBOLTED ON A STRAND SIFTER
EQUIPPED WITH A #35 TYLER SIEVE

Semolina and Spaghetti Color - A Minolta CR-310 series ChromaMeter was used to calculate an absolute value of a standard semolina and spaghetti sample in the L* a* b* color system. In this system, L* refers to lightness and a* and b* are the chromaticity coordinates (b* values relate to the blue - yellow chromaticity coordinates). A target b* value was obtained from semolina and spaghetti processed from the standard cultivar Vic. Nursery samples were measured in the difference mode whereby negative b* values were less intense and positive b* values were more intense than the perceived yellow color of the standard.

MACRO Spaghetti Processing - Spaghetti was processed on a semi-commercial scale pasta extruder (DEMACO). The controls and samples were processed under the following extruding conditions.

Temperature 49.5°C

Rate. 12 rpm

Absorption. 32.5%

Vacuum. 18 in Hg

These were the optimum conditions for processing spaghetti.

Processing spaghetti in the laboratory involved premixing 1000-g batches of semolina in a Hobart C-100-T mixer equipped with a pastry knife agitator. The contents were mixed at a slow speed for approximately 10 seconds while water was added to the semolina. Upon addition of all the water to obtain 32.5% absorption, the contents were blended at high speed for 30 seconds. The mixer was then stopped to scrape down the sides of the bowl, and blending continued for an additional 90 seconds to complete the premix stage. The premixed pasta was then transferred to the vacuum mixer of the press and extruded through an 84-strand 0.043 in. Teflon spaghetti die. A jacketed extension tube (9-1/4" long x 1-3/4" inside diameter) was attached to the semi-commercial pasta extruder to allow a longer time for hydration of the semolina and minimize the number of white specks (unhydrated semolina) in the spaghetti. Extrusion temperature was controlled by a circulating water bath.

Spaghetti Drying - Spaghetti was dried in an experimental pasta dryer for an 18 hour, computer controlled cycle. The drying cycle was a modification of that described by Gilles, Sibbitt and Shuey^{7/}. During the drying period, the humidity of the dryer was decreased linearly from 95 to 50% R.H. The temperature was held at 40°C for the first 10 hour and was then decreased linearly from 40°C to 25°C during the last 8 hours of the cycle.

Cooking Characteristics of Spaghetti

A. Cooking Procedure

Spaghetti (10 g) which had been broken into lengths of approximately 5 cm, was placed into 300 ml of boiling water in a 500 ml beaker. After 12 min. cooking, the samples were washed thoroughly with distilled water in a Buchner funnel, allowed to drain for 2 min., and then weighed to determine cooked weight.

B. Firmness Score

Two strands of cooked spaghetti were placed on a plexiglass plate and sheared at a 90° angle with a special plexiglass tooth. A continuous recording of distance versus force was made by an Instron instrument during the operation. An automatic integrator was used to calculate the area under the curve (g-cm) which was the amount of work required to shear the cooked spaghetti. To measure firmness, the average of three integrator scores was used, and the average work to shear represented a measure of spaghetti firmness.

Calculations were as follows:

$$E = 0.0216 \times A \text{ (g-cm)}$$

A = Average integrator reading

E = Area of curve expressed as g-cm (work)

The higher the value, the firmer the spaghetti. A value of approximately 7.00 appears to be preferred.

C. Residue

Weight of the solids remaining after the combined cooking and washing water was evaporated.

7/ Gilles, K.A., Sibbitt, L.D., and Shuey, W.C. Automatic laboratory dryer for macaroni products. Cereal Sci. Today 11:322 (1966).

DISCUSSION

The following discussion relates the basic techniques and criteria used in the quality evaluation of durum wheat cultivars. Testing factors used to determine the quality characteristics and final evaluation of a particular sample include kernel characteristics, milling performance, and cooking properties.

Each evaluation factor can be important. A sample could be of sufficiently poor quality for a given factor to eliminate it from possible future testing. However, a sample submitted for the first time and found to show little promise should be tested again to confirm the first evaluation. A sample which is consistently rated as little promise or no promise should be discontinued.

Data presented in this report were processed by using the Statistical Analysis System (SAS Institute, Inc., SAS Circle, Box 8000, Cary, NC 27511). The program developed from this system allows flexibility within the quality grading factors. This should allow the evaluations to relate more directly to industry and consumer requirements.^{8/}

The evaluation system consists of 9 dependent variables. These include test weight, 1000 kernel weight, percent small kernels, wheat protein, total extraction, semolina extraction, speck count, semolina protein, and spaghetti firmness score. Eight additional variables are measured and included in the tables for the reader's use and information but are not used in the computerized evaluation of the samples. These are percent large kernels, hardness, mixograph score, wheat ash, semolina ash, falling number, cooked weight, and cooking residue.

After computing an average of each of the 9 variables for the standards from a station or nursery, established values for individual samples are subtracted from each of the standard averages to determine major (MJ) and minor (MI) faulting limits. There are two exceptions where precise values have been assigned, which are independent of the station standards. The first exception is wheat protein, where percentages below 11.5% are classified as MJ faults, and percentages between 11.5% - 12.5% are MI faults (14% m.b.). The second exception is semolina protein, where percentages between 11.0% and 11.5% are classified as MI faults (14% m.b.). Hence, the wheat and semolina protein faulting values remain the same for all stations and nurseries.

^{8/} Nolte, L. L., Youngs, V. L., Crawford, R. D. and Kuerth, W. H. 1985. Computer program evaluation of hard red spring wheat. *Cereal Foods World* 30:227-229.

SELECTION OF STANDARDS

Whenever possible, the standards selected were commercial cultivars grown at each location or in each nursery. In the tables of data, the cultivars used as standards are identified by an "s" in the second column. At the bottom of each table are cited "average of standards". Quality deviation from these values determine the major and minor faults. In nurseries where breeders did not grow a cultivar for standard comparison with other selections, the North Dakota cultivar Vic was used as the standard. Vic, however, was not necessarily grown at the particular nursery. Other deviations are footnoted in the tables.

HOW SAMPLES ARE SCORED

Each sample is assigned an evaluation score of 4. Major and minor faults determined from the data entered into the computer will reduce this score, depending upon the quality factor being faulted. The effects of the different quality faults are shown in the following table:

DURUM PROGRAM FAULTING AND SCORING VALUES

Variable	Effect on Evaluation			
	Range ^{a/}		Score ^{b/}	
	Minor fault	Major fault	Minor fault	Major fault
Test Wt. (lb/bu)	-2.2	-3.1	-	-1
1000 KWT (g)	-2.1	-5.1	-	-1
Small Kernels (%)	+5	+10	-	-1
Wheat Prot. (%)	12.5	11.5	-1	-2
Tot. Ext. (%)	-2.5	-3.5	-1	-2
Semo. Ext. (%)	-3.0	-4.0	-1	-2
Specks/10 sq. in.	+10	+15	-	-1
Semo. Prot. (%)	11.5	11.0	-1	-2
Firmness (g cm)	-1.5	-2.25	-1	-2

a/ Wheat and semolina protein percents are fixed lower limits for faults. All other values represent the deviation from the average of the standards required to warrant a minor or major fault.

b/ These values are subtracted from a beginning score of 4.

EXPERIMENTAL RESULTS - 1992 CROP

The results are tabulated and presented in the following order: Field Plot Nursery, Tables 1-4; Uniform Regional Nursery, Tables 5-16; Advanced Nursery, Tables 28-29; and Preliminary, Tables 30-34.

FIELD PLOT NURSERY

Langdon, Fargo, Oaks, and Minot, North Dakota - Tables 1-4

Twenty-nine samples were received from these four stations, all of which were commercial cultivars. Samples were milled, and the semolina was processed into spaghetti using the macro method except samples from Fargo were not milled or processed due to low falling number. Vic was used as the standard for all locations.

UNIFORM REGIONAL NURSERY

Thirty-one cultivars and experimental lines were received from eleven stations in four states, or a total of three hundred forty-two samples were submitted for testing. Nine were commercial durum cultivars, one a commercial HRS wheat cultivar, and twenty-one experimental durum lines. Quality data on individual samples from each of the twelve nurseries is shown in Tables 5-16. Following in Tables 17-27 is a statistical evaluation of each cultivar and experimental line showing the overall mean, SD, minimum and maximum values, variance, and CV for nine selected variables.

ADVANCED NURSERY

A total of 102 samples were received from three stations in two state. Samples received from California were Buhler milled, and the semolina was processed into spaghetti. Samples received from Pendleton, Oregon were milled in a Quadrumat Junior mill but not processed into spaghetti.

Imperial Valley, California - Table 28

Thirty-five samples were received from this station. Aldura and Westbred 881 were used as the standard.

Davis, California - Table 29

Thirty-five samples were received from this station. Aldura and Westbred 881 were used as the standard.

Pendleton, Oregon - Table 30

Thirty-two samples were received from this station. Vic were used as the standard.

PRELIMINARY NURSERY

Pendleton, Oregon - Table 31-33

A total of 57 samples were received from Pendleton, Oregon. All samples were milled in a Quadrumat Junior mill but not processed into spaghetti. Vic was used as the standard for this location.

Tulelake, California - Table 34-35

A total of 60 samples were received from this station. Samples were milled in a Quadrumat Junior mill but not processed into spaghetti. Vic was used as the standard for this location.

**EXPLANATION OF ABBREVIATIONS
LISTED UNDER THE HEADINGS AND UNDER
MINOR AND MAJOR DEFICIENCIES IN TABLES**

MINOR AND MAJOR DEFICIENCIES ON COMPUTER PRINTOUT

S or STD = Standard

TW = Test Weight

1000 KWT or KW = 1000 Kernel Weight

LG = % Large Kernels

SM = % Small Kernels

WHT ASH = Wheat Ash

WHT PRO or WP = Wheat Protein

HRD = Hardness

TOTL EXTR or TX = Total Extraction (Semolina
Plus Flour)

SEMO EXTR or SX = Semolina Extraction

MX = Mixograph Score (The higher the number,
the stronger the curve)

SPK or SK = Semolina Speck Count

SEMO ASH = Semolina Ash

FALL NO = Semolina Falling Number Value
(Values above 300 are desired)

SEMO PRO or SP = Semolina Protein

CWT = Cooked Weight

FIRM or FR = Cooked Spaghetti Firmness Score
(Approx. 6.50 to 8.50 is the
desirable range)

RES = Residue in Water of Cooked Spaghetti

SCORE = Sample Evaluation Number (Example 4 =
Good Promise)

STANDARD MIXOGRAMS PATTERNS

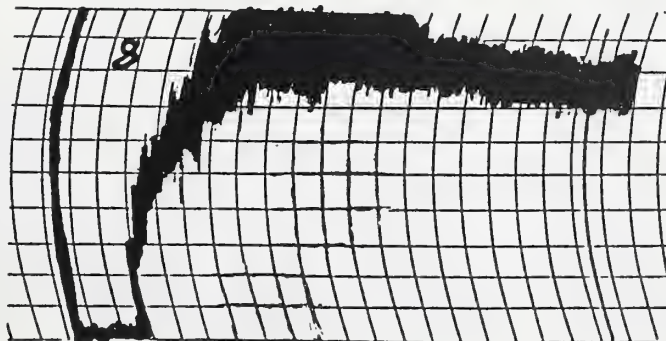
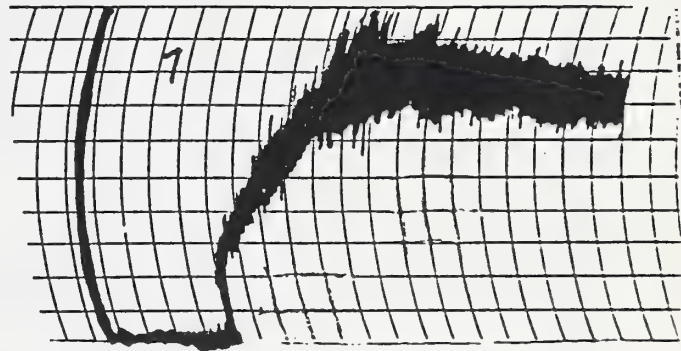
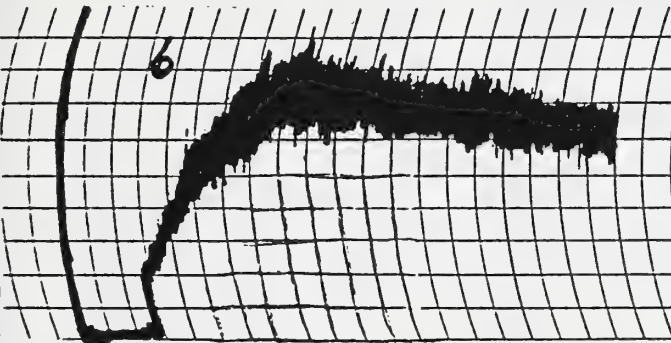
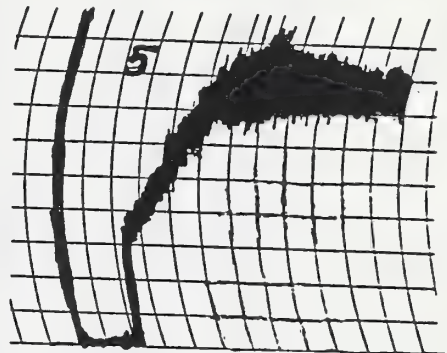
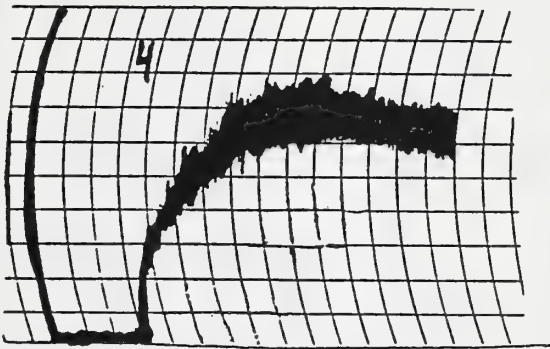
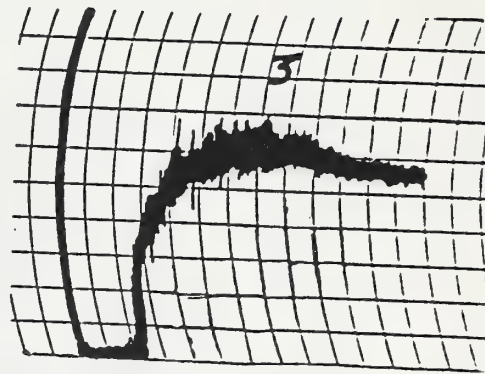
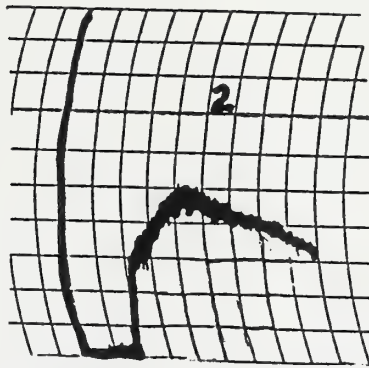
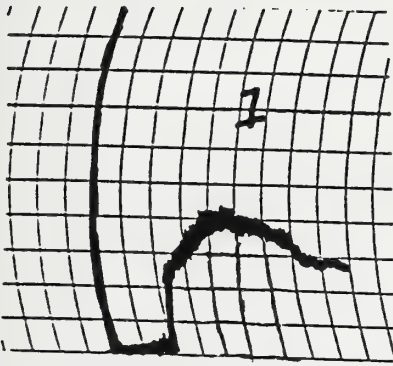


TABLE 1
QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=MINOT NURSERY=FIELD PLOT

-----VARIETY-----		STD	TEST #/BU	WT	1000 G.	SIZING LG	WHT SM	WHT ASH	WHT PRO	HARD-NESS	FALL SEC	TOTL EXTR	SEMO EXTR	SPK	SEMO ASH	DUST COLOR	MIXO SCORE
						%	%	%	%			%	%		%	L	b
STANDARD VIC	S		62.0	49.0	70	0	1.46	13.7	130	380	75.4	58.5	20	.67	0.0	0.0	6
WARD			61.2	43.5	68	0	1.48	16.8	114	392	78.3	60.8	27	.67	-0.8	-1.5	2
RUGBY			61.2	40.8	63	0	1.50	16.6	119	399	77.9	61.0	60	.67	-1.6	-1.4	2
VIC			61.2	45.8	75	0	1.46	16.0	107	400	76.5	61.3	33	.65	-1.1	-1.0	11
LLOYD			61.6	47.8	71	0	1.44	14.5	105	400	77.3	61.2	37	.65	-2.8	-0.4	4
MONROE			61.2	50.5	83	0	1.50	16.0	107	400	77.8	60.9	67	.65	-0.5	-0.9	5
RENVILLE			61.4	41.8	63	1	1.43	15.7	109	400	80.3	61.7	37	.61	-1.1	-2.5	3
MEDORA			61.9	45.2	75	1	1.44	16.4	116	400	77.0	59.5	60	.60	-1.0	-0.5	4

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=MINOT NURSERY=FIELD PLOT

-----VARIETY-----		STD	SEMO PRO	%	VIS COL	L	b	COOK FIRM- WT	NESS	RES	G.	SCORE ***	TW	KW	SM	WP	TX	SX	SK	SP	FR
STANDARD VIC	S		13.1	0.0	0.0	0.0	31.1	6.91	6.4	4											
WARD			16.4	0.6	1.0	34.6	5.38	6.4	2												
RUGBY			16.1	-1.5	1.6	33.4	5.79	6.3	2												
VIC			15.8	0.2	2.4	31.9	7.30	5.8	4												
LLOYD			14.0	-0.6	2.2	32.8	7.17	6.0	3												
MONROE			15.2	-1.1	1.8	33.3	6.85	6.0	3												
RENVILLE			15.2	-0.4	1.0	32.5	6.63	6.2	2												
MEDORA			15.5	-1.3	1.9	32.9	6.24	5.9	3												

DEFICIENCIES

	TW	KW	SM	WP	TX	SX	SK	SP	FR
AVG OF STANDARDS	62.0	49.0	0	13.7	75.4	58.5	20	13.1	6.91
MINOR FAULTING VALUES	59.8	46.9	5	12.5	72.9	55.5	30	11.5	5.41
MAJOR FAULTING VALUES	58.9	43.9	10	11.5	71.9	54.5	35	11.0	4.66

**EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

A Minolta CR-310 series ChromaMeter was used to calculate and absolute value of a standard semolina and spaghettini sample using the L a* b* color system. In this system L* refers to lightness; a* and b* are the chromaticity coordinates. (b* values relate to blue - yellow chromaticity coordinates.) After this target value was obtained; the nursery samples were measured in the difference mode. Therefore; a negative value indicates a value below the standard. The higher the b* value, the more yellow the perceived color.

The target values for this nursery are:

Semolina: L* 85.3 b* 33.6

Spahgetti: L* 63.8 b* 48.9

Example: Ward spahgetti: L* 63.8 + 0.6 = 64.4 b* 48.9 + 1.0 = 49.9

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=OAKS NURSERY=FIELD PLOT

TABLE 2

VARIETY	STD	TEST		1000	SIZING		WHT	WHT	HARD- NESS	FALL NO	TOTL EXTR	SEMO EXTR	SEMO SPK	SEMO ASH	DUST		MIXO SCORE
		WT #/BU	G.	LG	SM	%	%	%							%	L		b
STANDARD VIC	S	62.0	49.0	70	0	1.46	13.7	130	380	75.4	58.5	20	.67	0.0	0.0	6	
RUGBY		55.1	32.2	45	3	2.02	15.5	96	268	80.5	62.7	71	.92	-3.7	-1.2	3	
VIC		55.1	34.1	54	1	1.99	15.2	95	281	78.2	65.0	77	.88	-2.8	-0.9	7	
MONROE		54.6	35.5	54	2	1.94	14.4	96	321	78.6	62.0	80	.89	-3.3	-0.5	7	
RENVILLE		54.1	32.2	44	2	2.01	14.7	95	293	79.6	63.3	47	.93	-2.9	-2.5	8	
MEDORA		54.2	32.2	49	1	2.12	15.9	90	240	79.2	62.2	80	.92	-2.6	-0.3	7	
D8460		53.9	31.5	49	3	2.00	14.6	93	301	78.8	62.4	60	.91	-2.3	0.4	6	

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=OAKS NURSERY=FIELD PLOT

VARIETY	STD	SEMO PRO %	VIS COL L	COOK WT G.	FIRM- NESS G.	RES G.	SCORE ***	DEFICIENCIES											
								TW	KW	SM	WP	TX	SX	SK	SP	FR			
STANDARD VIC	S	13.1	0.0	0.0	31.1	6.91	6.4	4											
RUGBY		15.2	-7.2	-3.4	31.9	6.22	6.8	1											MJ
VIC		15.3	-7.8	-3.4	30.8	7.00	6.7	1											MJ
MONROE		14.2	-7.5	-1.9	31.8	6.31	6.3	1											MJ
RENVILLE		14.4	-8.9	-6.4	31.6	6.72	7.3	1											MJ
MEDORA		15.2	-8.0	-2.7	32.4	5.94	7.2	1											MJ
D8460		14.3	-7.7	-2.3	33.1	5.59	7.2	1											MJ

DEFICIENCIES
AVG OF STANDARDS
MINOR FAULTING VALUES
MAJOR FAULTING VALUES
**EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

A Minolta CR-310 series ChromaMeter was used to calculate an absolute value of a standard semolina and spahgetti sample in the L a* b* color system. In this system L* refers to lightness; a* and b* are the chromaticity coordinates. (b* values relate to the blue - yellow chromaticity coordinates.) After this target value was obtained; the nursery samples were measured in the difference mode. Therefore; a negative value indicates a value below the standard. The higher the b* value, the more yellow the perceived color. The target values for this nursery are:
Semolina: L* 85.3 b* 33.6
Spahgetti: L* 63.8 b* 48.9
Example: Rugby Spahgetti: L* 63.8 - 7.2 = 56.6 b* 48.9 - 3.4 = 45.5
The color values are not included in the rating of the sample.

TABLE 3 QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=LANGDON NURSERY=FIELD PLOT

VARIETY	STD	TEST		1000		SIZING		WHT		HARD-		FALL		TOTL		SEMO		SEMO		DUST		MIXO	
		WT	#/BU	K.WT	G.	LG	%	SM	%	ASH	%	PRO	%	NESS	SEC	NO	%	EXTR	%	SPK	ASH		%	L	b	SCORE
STANDARD VIC	S	62.0		49.0		70		0	1.37	14.6	130	380	75.4	58.5	20	.67	0.0	0.0				6	
WARD		61.0		34.1		50		3	1.66	13.4	140	332	77.5	60.7	37	.70	-1.7	-1.8				3	
MEDORA		59.6		34.8		60		4	1.64	13.4	139	302	78.0	60.6	53	.72	-1.8	-0.6				6	
VIC		61.5		37.7		55		1	1.62	13.4	137	358	78.1	58.9	53	.70	0.2	0.1				6	
CANDO		58.7		30.2		26		7	1.63	12.2	130	336	77.8	60.7	43	.73	-0.7	-1.1				2	
MONROE		57.6		33.8		34		3	1.59	14.0	131	304	78.1	61.2	37	.77	-1.8	-1.0				8	
RUGBY		59.8		31.8		39		3	1.63	13.9	148	312	79.1	61.6	27	.75	-1.3	-1.0				2	
RENVILLE		59.7		30.1		29		5	1.59	12.8	142	337	80.0	59.3	37	.70	-1.2	-2.4				6	
LLOYD		58.2		32.9		36		4	1.62	13.0	148	315	79.1	61.3	50	.77	-0.7	0.6				6	

TABLE 3 CONTD QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=LANGDON NURSERY=FIELD PLOT

VARIETY	STD	SEMO PRO %	VIS COL	COOK WT	FIRM- NESS	RES G.	SCORE ***								DEFICIENCIES							
							L	b	G.	TW	KW	SM	WP	TX	SX	SK	SP	FR				
STANDARD VIC	S	13.1	0.0	0.0	31.1	6.91	6.4	4														
WARD		13.1	-7.8	-2.9	33.3	5.12	6.6	1														
MEDORA		13.1	-3.4	-0.4	32.6	5.75	7.4	2														
VIC		13.0	0.1	3.6	31.9	6.52	7.1	2														
CANDO		11.8	-2.1	-0.5	32.6	5.14	7.6	1														
MONROE		13.7	-2.4	0.4	32.7	5.98	6.5	1														
RUGBY		13.4	-2.4	-0.2	33.5	4.84	7.2	2														
RENVILLE		12.4	0.3	1.0	32.5	5.42	6.3	2														
LLOYD		12.6	-1.8	0.6	31.5	6.20	6.4	1														

DEFICIENCIES

AVG OF STANDARDS 62.0 49.0 0 14.6 75.4 58.5 20 13.1 6.91
MINOR FAULTING VALUES 59.8 46.9 5 12.5 72.9 55.5 30 11.5 5.41
MAJOR FAULTING VALUES 58.9 43.9 10 11.5 71.9 54.5 35 11.0 4.66
**EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

A Minolta CR-310 series ChromaMeter was used to calculate an absolute value of a standard semolina and spahgetti sample in the L a* b* color system. In this system L* refers to lightness; a* and b* are the chromaticity coordinates. (b* values relate to the blue - yellow chromaticity coordinates.) After this target value was obtained; the nursery samples were measured in the difference mode. Therefore; a negative value indicates a value below the standard. The higher the b* value, the more yellow the perceived color. The target values for this nursery are:

Semolina: L* 85.3 b* 33.6
Spahgetti: L* 63.8 b* 48.9

Example: Ward Semolina: L* 85.3 - 1.7 = 83.6 b* 33.6 - 1.8 = 31.8
The color values are not included in the scoring.

TABLE 4 QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=FARGO NURSERY=FIELD PLOT

VARIETY	STD	TEST		1000		SIZING		WHT		WHT		HARD-		FALL		TOTL		SEMO		SEMO		DUST		MIXO	
		WT	#/BU	K.WT	G.	LG	%	SM	ASH	PRO	%	NESS	SEC	NO	SEC	EXTR	%	EXTR	%	SPK	ASH	L	b	SCORE	SCORE
STANDARD VIC	S	62.0		49.0		70		0	1.46	13.7		130	380												
CANDO		53.5		26.3		13		10	1.87	13.6		89	91												
WARD		58.1		32.3		41		2	1.76	13.6		100	192												
RUGBY		58.6		33.8		47		0	1.78	13.6		98	215												
VIC		58.4		36.1		45		1	1.81	13.9		103	189												
LLOYD		51.4		27.5		13		8	2.03	14.0		106	86												
MONROE		57.4		37.6		45		1	1.81	13.5		101	174												
RENVILLE		57.7		31.3		31		5	1.81	14.0		103	199												
MEDORA		57.5		33.1		43		2	1.88	14.3		105	170												

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=FARGO NURSERY=FIELD PLOT

VARIETY	STD	SEMO		VIS		COOK		FIRM-		SCORE		DEFICIENCIES	
		PRO	%	COL	b	WT	G.	NESS	RES	***	G.	TW	KW
STANDARD VIC	S												
CANDO													
WARD													
RUGBY													
VIC													
LLOYD													
MONROE													
RENVILLE													
MEDORA													

DEFICIENCIES TW KW SM WP TX SX SK SP FR
AVG OF STANDARDS 62.0 49.0 0 13.7
MINOR FAULTING VALUES 59.8 46.9 5 12.5 . . . 11.5 .
MAJOR FAULTING VALUES 58.9 43.9 10 11.5 . . . 11.0 .
**EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE
**DUE TO LOW FALLING NUMBER, SAMPLES WERE NOT MILLED.

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=SOUTH DAKOTA STATION=DAY CO. NURSERY=UNIFORM

TABLE 5

VARIETY	STD	TEST		1000		SIZING		WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR		MIXO	SCORE ***	DEFICIENCIES				
		WT #/BU	K.WT G.	LG %	SM %	L	b				TW	KW			SM	WP	SX		
MINDUM		60.9	36.4	37	0	13.7	99	63.2	-0.3	-7.7	3	4							
STOA		57.6	28.3	25	2	14.2	80	63.6	2.3	.	7	3							MJ
WARD	S	58.7	33.3	23	2	14.0	113	62.5	-1.9	-2.1	3	4							
RUGBY		58.6	32.6	26	0	13.9	103	63.1	-0.9	-2.8	2	4							
VIC	S	59.3	35.5	25	1	13.7	108	64.4	-1.3	-0.9	5	4							
LLOYD	S	54.5	32.9	20	2	13.8	91	62.0	-1.3	-2.2	5	4							MI
MONROE		58.0	36.0	33	0	13.6	100	62.0	-1.4	-0.1	6	4							
RENVILLE		57.6	29.6	10	5	14.2	109	64.1	-1.0	-3.2	7	4							MI
MEDORA		59.0	33.0	29	2	14.2	110	61.7	-1.2	-1.0	6	4							
SCEPTRE		55.8	29.1	19	4	13.5	98	60.5	-1.6	-3.6	6	4							MI
D8460		57.0	29.7	15	4	13.9	102	60.8	-1.8	0.2	6	4							MI
D86398		57.5	31.2	17	1	14.0	101	61.1	-0.9	-0.9	6	4							MI
D86741		57.4	30.8	23	2	13.5	98	62.2	-2.6	-1.7	5	4							MI
D87121		58.9	32.6	25	0	14.0	94	63.1	-0.1	-0.9	6	4							
D87122		57.8	30.1	22	2	14.1	104	61.0	-0.7	-1.7	6	4							MI
D87130		59.3	34.1	29	1	14.2	106	61.8	-1.1	-2.8	6	4							
D87141		58.4	33.9	21	2	13.7	96	61.4	-1.1	-2.5	6	4							
D87240		54.6	30.4	25	2	14.0	103	59.6	-1.7	0.5	7	3							MI
D87436		58.5	32.4	29	4	13.2	104	62.2	-1.8	-1.4	6	4							MI
D87450		54.6	31.2	10	3	13.7	99	60.8	-2.1	-1.2	5	4							MI
D88058		54.1	30.5	15	2	14.0	100	59.0	-1.9	-2.5	7	2							MJ
D88273		57.8	30.1	20	3	14.8	105	60.8	-1.0	-1.0	6	4							MI
D88277		56.8	27.4	9	6	14.4	109	58.4	-2.5	-0.3	6	1							MJ
D88284		56.6	30.6	25	2	14.8	103	59.5	-1.0	-1.7	6	3							MI
D88289		57.4	30.1	14	3	14.4	102	58.8	-1.9	0.7	6	2							MJ
D88303		55.8	31.8	19	4	14.1	101	60.8	-2.6	-3.0	6	4							MI
D88450		55.5	29.1	17	4	13.5	83	58.8	-2.3	-4.7	5	2							MJ
D88758		56.3	28.8	18	3	14.3	101	60.0	-1.9	0.0	6	3							MJ
D88793		55.8	34.2	37	0	14.4	109	60.0	-2.4	-1.4	5	4							
D86-1523		55.0	29.4	11	6	14.6	95	59.6	-2.1	-1.3	5	3							MI
D87-1534		55.5	31.5	25	4	14.2	93	62.0	-2.2	-0.2	6	4							MI

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 57.5 33.9 2 13.8 63.0
MINOR FAULTING VALUES 55.3 31.8 7 12.5 60.0
MAJOR FAULTING VALUES 54.4 28.8 12 11.5 59.0

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE-SOUTH DAKOTA STATION=SELBY NURSERY=UNIFORM

TABLE 6

VARIETY	STD	TEST		1000 K.WT G.	SIZING		WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR		MIXO	SCORE ***	DEFICIENCIES						
		WT #/BU			LG %	SM %				L	b			TW	KW	SM	WP	SX		
MINDUM		64.7	40.3	60	0	10.6	98	65.6	1.5	-6.1	1	2		MI						MJ
STOA		61.0	31.1	31	2	11.9	70	62.0	2.6		5	2			MJ					MI
WARD	S	63.0	42.9	64	0	11.5	110	62.3	0.1	-2.7	1	2								MJ
RUGBY		62.8	42.7	62	1	11.4	103	62.2	-0.4	-2.1	1	2								MJ
VIC	S	62.4	45.5	70	0	11.5	107	62.4	-0.6	-1.6	2	2								MJ
LLOYD	S	60.8	41.8	47	1	11.1	100	59.8	-0.2	-1.2	2	2								MJ
MONROE		61.5	44.4	69	0	11.8	104	62.4	-0.4	-1.6	3	3								MI
RENVILLE		62.6	39.4	44	1	10.8	100	64.6	0.7	-3.2	3	2		MI						MJ
MEDORA		63.0	45.0	70	0	11.7	108	63.0	-0.2	-1.1	3	3								MI
SCEPTRE		62.0	41.3	60	1	10.9	104	62.0	-0.1	-2.0	3	2		MI						MJ
D8460		62.8	40.2	53	0	10.6	106	62.7	-0.2	0.1	3	2		MI						MJ
D86398		62.6	42.7	62	0	10.5	96	62.5	0.3	-0.8	2	2								MJ
D86741		62.6	40.7	57	0	11.2	95	63.3	-0.5	0.0	2	2		MI						MJ
D87121		63.0	43.9	70	1	11.7	104	63.3	-0.4	-0.6	3	3								MI
D87122		63.2	43.5	73	1	11.8	109	63.2	0.1	-1.3	3	3								MI
D87130		63.5	48.5	78	0	11.4	104	62.7	1.1	-2.8	2	2								MJ
D87141		62.2	42.2	53	0	10.9	104	61.4	-0.6	-2.3	2	2								MJ
D87240		60.4	43.7	62	0	11.0	102	61.6	-0.7	1.3	3	2								MJ
D87436		62.0	40.2	57	0	10.9	110	61.8	0.0	-2.1	3	2		MI						MJ
D87450		59.5	39.7	32	1	10.9	103	60.8	0.5	0.4	2	2		MI						MJ
D88058		61.3	40.5	41	0	11.7	111	60.8	-1.4	-2.1	3	3								MI
D88273		62.6	40.3	52	0	11.9	109	63.0	-0.6	0.0	3	3								MI
D88277		63.1	38.5	44	1	10.9	100	61.7	-0.3	0.9	3	2								MJ
D88284		63.0	41.2	59	1	11.6	105	60.2	-0.3	-0.7	3	3								MI
D88289		63.1	39.4	52	2	11.7	111	61.2	-0.4	0.3	3	3								MI
D88303		61.5	37.6	45	1	11.5	98	60.8	-0.8	-2.8	2	1								MJ
D88450		62.4	42.7	46	1	10.6	105	63.3	0.0	-1.7	2	2								MJ
D88758		62.3	38.8	48	1	12.0	110	62.0	-0.7	1.6	3	3		MI						MI
D88793		61.8	43.5	66	1	11.4	107	60.6	-0.3	-0.5	5	2								MJ
D86-1523		62.6	39.4	37	0	11.2	103	62.1	0.0	0.0	4	2		MI						MJ
D87-1534		61.4	39.5	45	1	10.8	97	62.7	-0.2	1.6	4	2		MI						MJ

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 62.1 43.4 0 11.4 61.5
MINOR FAULTING VALUES 59.9 41.3 5 12.5 58.5
MAJOR FAULTING VALUES 59.0 38.3 10 11.5 57.5

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=MINNESTOA STATION=CROOKSTON NURSERY=UNIFORM

TABLE 7

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SM %	WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR L b	MIXO	SCORE ***	DEFICIENCIES TW KW SM WP SX
MINDUM		61.9	35.7	28	1	13.5	96	65.7	0.5 -6.2	3	4	MI
STOA		61.4	33.8	46	0	13.3	69	67.7	3.7	8	3	MJ
WARD	S	61.4	38.2	37	2	13.8	105	65.7	0.9 -1.2	2	4	
RUGBY		60.8	33.6	16	3	13.9	104	63.5	-0.2 -0.8	2	3	MJ
VIC	S	61.8	40.8	45	0	13.1	104	67.5	0.7 -0.5	4	4	
LLOYD	S	59.0	40.0	33	3	12.6	95	62.3	0.2 -1.0	4	4	
MONROE		60.6	41.8	48	1	14.1	101	65.6	0.0 -0.2	5	4	
RENVILLE		60.9	37.9	38	2	13.3	104	66.5	1.2 -2.9	3	4	
MEDORA		61.5	35.6	35	3	14.0	110	62.9	0.5 -0.1	3	4	MI
SCEPTRE		59.6	33.3	31	3	12.8	96	64.5	0.2 -2.2	4	3	MJ
D8460		60.6	31.6	19	2	13.1	102	63.0	0.4 1.5	3	3	MJ
D86398		60.0	36.5	33	2	13.2	94	64.2	1.0 0.3	4	4	MI
D86741		60.9	35.1	27	3	11.8	93	63.4	-0.3 0.3	3	3	MI
D87121		61.0	42.6	59	0	13.7	91	67.3	-0.4 -1.7	4	4	
D87122		61.0	36.9	43	1	13.5	97	65.1	-0.1 -0.6	3	4	MI
D87130		61.4	40.7	51	0	13.8	98	64.2	0.2 -2.1	5	4	
D87141		59.8	33.8	17	4	14.2	104	59.3	0.4 -1.8	5	1	MJ
D87240		59.2	42.0	64	0	12.9	97	62.7	0.7 0.0	6	4	
D87436		62.6	38.8	46	1	12.3	101	63.9	0.4 -1.0	4	3	MI
D87450		59.4	36.9	23	1	12.0	89	63.5	0.1 0.9	4	3	MI
D88058		60.1	36.4	35	3	12.5	98	62.7	0.6 -1.1	4	3	MI
D88273		60.2	33.9	31	2	13.4	101	65.1	0.5 -1.2	4	3	MI
D88277		60.3	33.7	28	5	13.3	104	61.7	0.3 -0.3	4	2	MJ
D88284		59.9	36.0	37	3	13.5	107	62.7	0.5 -1.5	4	4	MI
D88289		60.1	33.3	25	4	13.7	104	61.4	0.0 0.3	4	2	MI
D88303		60.9	39.1	38	1	13.5	100	64.5	-0.1 -1.2	5	4	
D88450		60.9	35.8	29	4	12.6	91	63.0	0.1 -1.4	4	4	MI
D88758		61.8	38.0	42	1	13.8	100	63.2	0.2 0.6	4	4	
D88793		59.8	35.5	29	1	14.7	105	60.6	0.3 0.5	5	2	MJ
D86-1523		61.7	36.4	33	3	12.9	100	62.7	-0.2 0.1	6	4	MI
D87-1534		60.4	37.0	49	1	12.9	102	63.9	0.4 1.0	3	4	MI

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 60.7 39.7 2 13.2 65.2
MINOR FAULTING VALUES 58.5 37.6 7 12.5 62.2
MAJOR FAULTING VALUES 57.6 34.6 12 11.5 61.2

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=MINNESTOA STATION=MORRIS NURSERY=UNIFORM

TABLE 8

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING		WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR		MIXO	SCORE ***	DEFICIENCIES				
				LG %	SM %				L	b			TW	KW	SM	WP	SX
MINDUM		61.0	36.8	51	1	13.1	98	60.1	-0.3	-6.9	2	4		MI			
STOA		56.8	31.9	43	0	13.6	77	63.0	2.7	.	7	2		MJ			
WARD	S	62.0	40.7	64	0	13.5	115	61.6	-0.7	-3.2	2	4					
RUGBY		62.4	43.3	67	0	13.3	113	58.8	-0.2	-3.3	1	4					
VIC	S	60.9	42.4	61	1	13.9	116	58.7	-0.1	-1.9	4	4					
LLOYD	S	60.6	41.7	50	0	13.3	111	57.6	-0.6	-1.0	4	4					
MONROE		62.0	43.9	71	0	12.8	105	61.4	-0.8	-0.9	3	4					
RENVILLE		61.3	40.7	54	1	13.1	115	62.0	-0.8	-3.6	3	4					
MEDORA		60.6	40.2	57	2	13.4	108	59.0	-0.7	-1.1	3	4					
SCEPTRE		59.4	34.5	35	2	12.9	100	60.8	0.0	-4.4	4	3		MJ			
D8460		60.9	37.3	48	1	12.8	105	60.8	0.2	-0.2	2	4		MI			
D86398		60.2	40.3	52	1	13.0	107	60.8	-0.4	-0.3	3	4					
D86741		57.9	31.2	25	6	12.5	89	60.0	-1.1	-0.1	3	1		MJ	MJ	MI	MI
D87121		62.2	43.7	67	0	13.0	108	62.3	-0.9	-0.6	3	4					
D87122		61.8	43.5	73	1	13.4	104	64.5	-0.9	-2.7	3	4					
D87130		62.0	48.3	75	0	13.5	108	61.4	0.0	-3.7	3	4					
D87141		61.5	41.0	58	0	13.2	111	60.0	-0.1	-2.9	3	4					
D87240		59.4	47.1	79	0	13.5	108	61.2	-0.6	-0.8	3	4					
D87436		60.0	36.9	51	1	12.8	104	57.8	-1.8	-0.5	3	4		MI	MI	MI	MI
D87450		58.2	37.0	31	2	12.2	106	59.8	-0.7	-0.2	3	3		MI	MI	MI	MI
D88058		58.1	33.4	27	2	13.1	103	55.7	-1.1	-1.2	4	2					
D88273		61.0	37.3	52	1	14.2	111	55.4	-0.5	-1.2	5	3					
D88277		62.2	38.8	50	1	13.0	112	56.5	-0.4	-0.9	4	4					
D88284		60.6	37.2	56	1	14.1	110	55.7	-0.7	-0.8	5	3					
D88289		61.6	39.4	52	1	13.3	104	59.0	-0.2	-0.6	5	4					
D88303		60.6	37.9	45	1	12.8	109	60.2	-1.1	-1.8	5	4					
D88450		60.0	36.2	45	2	12.4	92	57.2	-0.7	-2.6	4	2					
D88758		60.8	34.7	36	1	13.5	106	60.0	-1.2	0.9	5	3					
D88793		60.5	42.6	70	1	13.9	108	58.7	-1.1	-1.1	5	4					
D86-1523		57.8	31.6	11	8	14.4	105	54.8	-2.0	0.6	6	1		MJ	MJ	MI	MJ
D87-1534		59.8	37.9	51	1	13.3	103	60.2	-1.4	0.3	5	4		MI			

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 61.2 41.6 0 13.6 59.3
MINOR FAULTING VALUES 59.0 39.5 5 12.5 56.3
MAJOR FAULTING VALUES 58.1 36.5 10 11.5 55.3

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 9

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=MONTANA STATION=BOZEMAN NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG SM % %	WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR L B	MIXO	SCORE ***	DEFICIENCIES TW KW SM WP SX
MINDUM		55.1	27.0	9	17.3	113	57.8	-1.6	-2.9	2	MI MJ MI
STOA		57.0	29.6	32	14.6	83	62.1	2.2	-13.7	6	MI
WARD	S	58.7	35.1	33	16.3	119	60.3	-0.4	1.2	2	
RUGBY		59.1	32.6	22	15.8	117	61.3	-1.6	2.2	2	
VIC	S	60.1	35.7	24	15.6	106	62.1	0.0	3.4	6	
LLOYD	S	55.3	30.0	8	16.9	101	55.8	-0.9	5.5	6	MI
MONROE		60.1	37.2	46	15.4	105	63.0	-0.4	1.2	6	
RENVILLE		59.4	33.0	11	15.6	107	63.9	-0.3	1.9	8	
MEDORA		60.8	36.4	43	16.2	115	59.1	0.1	3.1	5	
SCEPTRE		59.0	35.8	41	16.1	93	62.2	-0.3	1.9	6	
D8460		59.6	31.5	25	15.1	111	62.1	-0.7	4.2	4	
D86398		59.4	37.2	37	15.7	111	62.2	-0.6	4.4	5	
D86741		59.4	33.4	26	14.6	108	58.1	-0.9	4.3	3	
D87121		59.9	40.8	50	15.7	107	62.8	-0.3	1.1	3	
D87122		60.5	36.8	52	15.3	96	59.5	-0.1	0.9	4	
D87130		60.1	36.8	25	16.0	108	61.3	-0.4	1.3	6	
D87141		59.5	34.4	32	16.3	103	56.2	-0.2	0.1	7	MI
D87240		57.6	36.8	51	15.7	106	58.3	-0.5	3.5	7	
D87436		59.8	31.6	18	15.1	110	61.1	-1.1	2.8	6	
D87450		57.2	32.3	15	14.8	100	59.7	-1.2	4.3	7	
D88058		58.7	34.0	33	15.2	97	56.8	-0.8	2.9	6	
D88273		60.2	35.7	33	16.2	113	61.9	-0.4	1.8	8	
D88277		60.1	35.1	32	15.5	112	60.4	0.6	3.4	8	
D88284		59.8	35.0	47	15.9	112	59.7	0.3	1.8	7	
D88289		60.0	36.5	44	15.7	113	57.1	-0.3	4.0	6	
D88303		57.0	30.5	9	15.6	113	56.5	-0.6	3.7	7	MI MI
D88450		57.8	32.1	17	16.5	94	56.8	-1.9	3.5	5	
D88758		59.4	34.2	24	16.3	113	58.4	-0.8	4.5	5	
D88793		57.8	33.1	32	16.2	117	59.5	-1.1	5.2	6	
D86-1523		57.8	28.9	4	16.5	100	60.3	-1.8	5.7	6	MI MJ
D87-1534		55.7	28.5	9	16.9	101	57.1	-1.4	5.7	7	MI MI MI

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 58.0 33.6 3 16.3 59.4
MINOR FAULTING VALUES 55.8 31.5 8 12.5 56.4
MAJOR FAULTING VALUES 54.9 28.5 13 11.5 55.4

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=MONTANA STATION=SIDNEY NURSERY=UNIFORM

TABLE 10

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING		WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR		MIXO	SCORE ***	DEFICIENCIES					
				LG %	SM %				L	b			TW	KW	SM	WP	SX	
MINDUM		64.3	47.1	79	0	14.0	108	65.2	0.8	-6.9	2	4			MI			
STOA		60.8	38.6	75	0	14.2	66	67.1	2.2	.	6	3			MI	MJ		
WARD	S	63.2	45.8	78	0	15.5	115	65.4	0.0	-2.4	2	4				MI		
RUGBY		63.4	43.9	71	1	15.4	114	65.8	0.0	-2.1	2	3				MJ		
VIC	S	63.4	51.8	85	0	12.9	96	64.3	0.3	-1.1	3	4						
LLOYD	S	63.2	54.1	75	0	16.0	114	66.5	0.5	-0.3	3	4						
MONROE		62.2	46.3	88	0	14.2	98	64.1	-0.2	-1.2	4	4				MI		
RENVILLE		63.4	50.3	72	0	15.1	107	67.1	0.5	-2.9	3	4						
MEDORA		63.8	46.5	82	0	15.0	109	62.4	-0.3	-0.8	3	3				MI		
SCEPTRE		62.7	45.2	77	0	14.4	100	66.2	-0.4	-1.3	3	3				MJ		
D8460		62.6	46.7	75	2	14.8	103	65.8	-0.4	-0.1	3	4				MI		
D86398		62.8	49.8	81	0	14.0	102	64.1	0.5	-0.2	3	4						
D86471		63.4	49.0	82	0	13.3	107	66.9	-0.3	-0.2	3	4						
D87121		63.2	51.0	88	0	15.3	111	65.2	-0.5	-0.6	5	4						
D87122		63.4	50.0	87	0	14.1	105	64.3	0.6	-1.3	3	4						
D87130		63.7	52.1	88	0	14.5	109	63.1	0.9	-2.8	3	4						
D87141		63.2	50.5	80	1	14.4	110	65.0	0.0	-3.3	4	4						
D87240		62.3	52.6	88	0	14.2	111	63.9	-0.9	0.0	5	4						
D87436		64.1	49.8	85	0	14.8	110	65.0	-0.7	-1.0	5	4						
D87450		63.0	52.4	77	1	13.8	112	65.0	-0.2	-0.2	5	4						
D88058		64.2	54.6	88	0	13.6	103	64.3	0.6	-2.5	4	4						
D88273		63.4	50.5	85	0	15.2	115	66.0	-0.2	-1.0	4	4						
D88277		64.0	45.8	79	0	14.7	111	66.1	-1.3	-0.1	4	4				MI		
D88284		63.4	48.3	84	0	15.0	110	65.6	-0.6	-1.1	4	4				MI		
D88289		63.4	50.0	83	0	15.8	122	63.1	-0.9	-0.3	4	4						
D88303		63.8	54.1	87	0	15.2	107	63.1	-0.2	-2.5	4	4						
D88450		63.8	51.3	80	1	14.0	102	64.7	-0.2	-2.1	3	4						
D88758		63.1	48.5	84	0	15.6	115	63.5	-0.4	0.0	6	4						
D88793		63.1	51.8	89	0	16.3	107	63.5	-0.9	-1.4	6	4						
D86-1523		63.5	52.4	84	0	15.1	104	62.8	-0.3	-0.3	6	4						
D87-1534		64.0	52.1	85	0	14.1	107	67.3	-0.7	1.3	5	4						

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 63.3 50.6 0 14.8 65.4
MINOR FAULTING VALUES 61.1 48.5 5 12.5 62.4
MAJOR FAULTING VALUES 60.2 45.5 10 11.5 61.4

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 11

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=DICKINSON NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING		WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR		MIXO	SCORE ***	DEFICIENCIES			
				LG %	SM %				L	B			TW	KW	SM	WP	SX
MINDUM		63.5	42.0	66	0	15.0	125	63.2	0.2	-5.4	2	3				MJ
STOA		62.4	41.3	61	0	14.5	90	66.7	-0.6	-9.8	7	3				MJ
WARD	S	63.6	48.1	78	0	14.9	116	62.2	0.1	-1.8	2	4				
RUGBY		63.7	45.0	72	0	14.9	126	63.5	-0.6	-1.2	2	4				MI
VIC	S	63.8	49.5	80	0	15.0	127	63.7	0.4	-0.7	4	4				
LLOYD	S	63.4	51.5	81	0	14.0	114	64.1	-0.1	-0.1	3	4				
MONROE		64.1	49.8	86	0	14.4	114	64.1	1.1	-1.4	4	4				
RENVILLE		63.6	47.1	72	0	14.6	119	64.4	0.1	-1.2	4	4				MI
MEDORE		65.0	48.5	80	0	15.4	122	61.1	-0.7	0.4	4	4				
SCEPTRE		63.5	48.5	76	0	14.3	117	61.3	0.6	-1.5	3	4				
D8460		64.1	45.5	75	0	14.4	117	65.6	0.1	-0.5	4	4				MI
D86398		64.2	48.5	83	0	14.8	117	62.4	-0.2	-1.2	4	4				
D86741		63.8	49.5	86	0	14.5	113	66.0	-0.9	-0.6	4	4				
D87121		63.4	52.4	89	0	15.0	119	62.4	0.3	-1.4	5	4				
D87122		63.5	52.6	87	0	14.5	123	63.5	0.6	-2.1	5	4				
D87130		64.1	49.3	84	0	14.8	117	64.3	0.8	-3.0	5	4				MI
D87141		63.7	46.7	77	0	14.6	114	60.5	0.9	-3.0	4	4				
D87240		63.2	52.1	85	0	13.8	109	66.9	-0.1	-1.6	4	4				MI
D87436		63.7	47.4	83	0	14.7	108	63.9	0.4	-4.0	4	4				MI
D87450		63.3	52.6	84	0	13.8	112	65.8	0.8	0.3	4	4				
D88058		64.2	51.0	84	0	14.6	119	62.3	0.5	-1.3	4	4				
D88273		63.9	46.3	78	0	14.6	110	61.1	0.2	-2.0	4	4				MI
D88277		64.1	46.1	76	0	14.1	116	63.2	-0.1	0.4	5	4				MI
D88284		63.7	47.8	83	0	14.6	113	61.5	0.9	-1.5	5	4				
D88289		63.5	49.0	79	0	15.1	116	63.9	0.6	-0.6	5	4				
D88303		63.5	49.5	77	0	14.2	119	63.7	-0.1	-1.5	4	4				
D88450		64.3	48.8	82	0	13.6	101	62.4	0.7	-2.6	4	4				
D88758		64.5	47.8	80	0	14.7	116	65.6	0.2	1.2	5	4				
D88793		63.8	49.8	86	0	14.9	107	63.5	0.0	-0.5	4	4				
D86-1523		63.9	48.5	84	0	14.2	121	62.8	-0.2	-1.1	4	4				
D87-1534		63.2	47.8	78	0	13.9	115	65.0	0.3	0.8	4	4				

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 63.6 49.7 0 14.6 63.3
MINOR FAULTING VALUES 61.4 47.6 5 12.5 60.3
MAJOR FAULTING VALUES 60.5 44.6 10 11.5 59.3

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE-NORTH DAKOTA STATION=CARRINGTON NURSERY=UNIFORM

TABLE 12

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG SM % %	WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR		MIXO	SCORE ***	DEFICIENCIES			
								L	B			TW	KW	SM	WP SX
MINDUM		58.0	32.9	33	4	14.6	96	-0.2	-4.9	2	4				
STOA		55.9	30.7	52	0	14.5	84	1.6	-14.2	5	4				
WARD	S	59.0	35.0	43	2	14.8	99	-0.3	-1.2	2	4			MI	
RUGBY		59.0	36.0	43	1	14.3	96	0.0	-0.8	1	4				
VIC	S	59.8	37.7	50	1	14.5	107	0.1	0.3	3	4				
LLOYD	S	53.4	30.3	21	5	14.2	86	-1.3	1.1	4	2				
MONROE		55.4	32.8	34	2	14.3	95	-0.6	1.7	4	4			MJ	MI
RENVILLE		57.9	32.6	24	5	14.5	106	-0.4	-1.0	3	4				
MEDORA		57.0	33.3	40	0	15.2	104	-0.7	1.1	4	4				
SCEPTRE		55.8	30.5	29	3	15.0	106	-0.8	-0.7	3	4			MI	
D8460		54.9	29.1	22	4	15.1	98	-0.8	2.0	3	3			MI	MJ
D86398		55.4	34.2	40	1	14.8	99	-0.3	0.4	3	4				
D86741		56.1	30.8	26	6	13.5	93	-1.3	2.2	3	4			MI	
D87121		58.7	36.8	46	0	14.8	98	-0.6	1.5	5	4				
D87122		57.1	35.2	46	0	14.8	99	-0.3	-0.3	3	4				
D87130		58.4	35.2	49	1	14.7	105	-0.5	-1.0	4	4				
D87141		57.6	31.9	31	2	14.9	97	-0.6	-1.1	4	4			MI	
D87240		57.0	37.5	58	0	14.8	107	-0.7	0.9	5	4				
D87436		57.4	31.2	29	2	13.4	99	-0.7	0.6	6	4			MI	
D87450		54.9	31.7	19	4	13.6	111	-1.2	2.1	6	4			MI	MI
D88058		54.6	31.7	24	2	14.1	95	-1.6	0.6	6	4			MI	MI
D88273		55.8	33.2	36	2	15.2	103	-0.6	-0.4	6	3				
D88277		55.5	28.9	21	5	15.0	99	-1.6	1.8	6	1			MJ	MJ
D88284		56.6	31.3	41	3	14.9	105	-0.8	0.6	6	4			MI	
D88289		56.6	31.0	29	3	16.9	103	-1.0	2.1	6	4			MI	MJ
D88303		54.5	27.5	15	8	14.3	90	-1.8	0.6	6	1			MI	MJ
D88450		55.8	28.9	26	6	14.2	101	-1.0	-0.9	6	1			MJ	MJ
D88758		56.6	32.4	41	1	14.7	98	-1.1	1.9	6	4				
D88793		56.8	36.0	54	0	15.3	106	-0.9	0.5	6	4				
D86-1523		56.2	29.4	18	7	14.7	106	-1.2	1.2	6	3			MI	MI
D87-1534		53.8	28.3	22	6	14.9	96	-1.4	2.2	6	1			MJ	MJ

DEFICIENCIES
AVG OF STANDARDS 57.4 34.3 3 14.5 63.1
MINOR FAULTING VALUES 55.2 32.2 8 12.5 60.1
MAJOR FAULTING VALUES 54.3 29.2 13 11.5 59.1

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=WILLISTON NURSERY=UNIFORM

TABLE 13

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG SM % %	WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR L B	MIXO	SCORE ***	DEFICIENCIES TW KW SM WP SX
MINDUM		61.7	38.6	50	0	14.6	112	0.3	-6.3	2	MJ
STOA		60.1	31.2	43	0	14.4	77	2.5	-14.7	5	MJ
WARD	S	62.4	44.2	72	0	15.6	133	0.6	-1.4	2	MI
RUGBY		62.0	43.7	63	0	15.2	116	0.6	-2.4	2	MI
VIC	S	62.9	48.1	77	0	15.4	122	-1.2	0.9	3	MI
LLOYD	S	61.7	50.5	70	0	14.1	124	-0.3	1.7	4	
MONROE		62.4	48.1	80	0	15.4	122	0.7	-0.9	4	
RENVILLE		61.5	42.7	42	0	14.7	128	0.7	-2.2	3	MI
MEDORA		62.9	44.4	72	0	15.4	125	0.4	-0.4	3	MI
SCEPTRE		61.5	42.6	67	0	15.1	120	0.7	-0.8	4	MI
D8460		61.6	41.8	59	0	15.0	116	0.6	0.9	3	MJ
D86398		62.0	43.9	66	0	14.5	118	0.8	-0.3	3	MJ
D86741		63.0	45.8	74	0	13.8	112	-0.6	1.4	3	MI
D87121		62.4	46.7	79	0	15.9	126	0.7	-1.2	6	MJ
D87122		62.2	47.1	83	0	15.3	120	0.4	-0.7	6	
D87130		62.2	48.5	78	0	15.7	127	0.4	-1.9	5	MJ
D87141		62.1	46.5	69	0	15.7	122	0.6	-3.3	5	MJ
D87240		60.6	45.5	70	0	14.6	118	0.5	-0.8	5	MJ
D87436		63.0	52.1	86	0	14.2	125	0.3	-1.4	3	MJ
D87450		61.3	47.1	67	0	13.7	111	1.1	-0.4	3	MJ
D88058		63.0	51.8	82	0	13.9	116	0.2	-0.2	3	MJ
D88273		62.5	44.1	67	0	15.1	123	0.8	-1.8	5	MJ
D88277		63.2	42.4	63	0	15.0	129	-0.4	0.3	4	MI
D88284		61.7	44.4	75	0	15.4	127	0.4	-1.6	3	MJ
D88289		62.0	45.2	72	0	15.6	131	0.1	0.9	5	MI
D88303		63.0	48.1	72	0	14.9	128	0.5	-0.6	5	MI
D88450		62.9	46.3	70	0	13.7	106	0.2	-0.7	3	MJ
D88758		62.6	45.0	72	0	15.3	124	0.3	0.5	5	MJ
D88793		61.9	47.8	83	0	15.9	130	0.1	0.4	6	MJ
D86-1523		62.7	48.1	71	0	14.5	113	0.5	1.0	4	MJ
D87-1534		63.1	48.1	76	0	14.1	123	0.4	1.6	4	MJ
STOCKHOLM		62.2	45.0	59	0	13.7	114	0.6	-0.4	3	MI

DEFICIENCIES
AVG OF STANDARDS 62.3 47.6 0 15.0 63.5
MINOR FAULTING VALUES 60.1 45.5 5 12.5 60.5
MAJOR FAULTING VALUES 59.2 42.5 10 11.5 59.5

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

TABLE 14

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=MINOT NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING		WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR		MIXO	SCORE ***	DEFICIENCIES							
				LG	SM				L	B			TW	KW	SM	WP	SX			
LLOYD	S	63.4	54.1	86	0	14.0	133	62.8	0.5	-2.6	4	4								
MEDORA		62.5	50.5	84	1	15.6	132	61.2	0.1	-2.7	4	4								
MINDUM		62.9	52.6	86	0	15.1	126	60.7	0.7	-7.7	2	4								
MONROE		63.1	53.5	84	0	14.1	117	62.8	1.2	-3.2	4	4								
RENVILLE		62.0	46.9	64	1	15.0	121	66.8	-0.1	-3.9	4	4			MI					
RUGBY		62.9	48.3	66	1	14.4	127	63.8	0.4	-2.8	2	4			MI					
SCEPTRE		62.6	52.4	84	0	15.3	126	61.4	0.1	-3.1	4	4								
STOA		60.9	39.8	78	2	14.5	80	63.6	2.2	-15.3	6	3			MJ					
VIC	S	62.8	53.2	84	1	14.6	120	64.5	0.6	-2.1	3	4								
WARD	S	63.0	47.4	71	0	14.8	124	62.6	0.2	-2.9	2	4			MI					
D8460		62.3	47.6	71	0	14.7	112	63.8	0.5	-1.5	4	4			MI					
D86398		62.8	51.0	83	1	14.7	118	57.9	1.0	-2.2	3	2								MJ
D86741		62.9	51.5	83	0	13.9	116	62.5	0.1	-2.6	3	4								
D87121		63.2	53.2	84	1	14.3	111	66.5	0.6	-1.3	6	4								
D87122		63.0	50.5	88	0	14.9	112	64.5	0.9	-2.2	7	4								
D87130		62.7	50.0	83	0	15.0	124	61.3	0.8	-2.7	7	4								
D87141		62.4	50.8	80	0	14.9	115	62.6	0.3	-4.6	6	4								
D87240		60.7	54.3	88	0	14.5	115	62.3	0.1	-1.7	6	4			MI					
D87436		63.7	55.9	91	1	14.0	122	63.7	0.0	-4.1	5	4								
D87450		60.9	54.1	82	1	13.9	113	63.2	0.5	-2.4	4	4								
D86-1523		63.4	43.7	86	1	14.2	112	62.8	0.5	-1.7	4	3			MJ					
D88058		62.9	53.8	85	0	13.7	118	63.4	0.6	-4.2	4	4								
D88273		61.6	50.8	83	1	15.1	126	64.3	-0.7	-2.8	6	4								
D88277		62.3	49.5	82	0	14.6	121	57.1	0.1	-2.9	4	2								MJ
D88284		61.7	52.6	86	0	15.1	123	62.0	0.1	-2.9	6	4								
D88289		61.9	49.8	79	0	15.1	121	62.7	0.2	-0.8	6	4								
D88303		62.5	55.6	87	0	14.9	122	62.3	0.2	-3.5	6	4								
D88450		62.8	49.5	87	0	14.1	107	65.6	0.2	-3.3	5	4								
D88758		62.6	47.5	84	1	14.7	113	65.1	-0.1	-0.2	4	4			MI					
D88793		62.9	55.2	91	0	15.2	121	66.5	-0.1	-1.8	4	4								
D87-1534		62.6	52.4	88	0	14.3	118	65.3	0.1	-0.1	6	4								

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 63.1 51.6 0 14.5 63.3
MINOR FAULTING VALUES 60.9 49.5 5 12.5 60.3
-MAJOR FAULTING VALUES 60.0 46.5 10 11.5 59.3

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=LANGDON NURSERY=UNIFORM

TABLE 15

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG SM % %	WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR L b	MIXO	SCORE ***	DEFICIENCIES TW KW SM WP SX
MINDUM		60.6	32.7	51	0	13.3	105	-0.9 -7.0	3	3	MJ
STOA		60.1	36.6	55	1	13.0	75	1.0	7	4	
WARD	S	62.0	33.7	63	0	13.1	110	-0.2 -3.7	2	4	MI
RUGBY		62.1	42.7	53	2	12.9	102	-0.6 -2.8	1	4	
VIC	S	62.2	38.9	62	0	12.7	110	-0.3 -1.9	3	4	
LLOYD	S	58.9	41.5	38	1	11.8	99	-1.0 -1.8	3	2	MI MI
MONROE		61.4	39.1	72	0	12.4	105	-0.4 -1.8	3	3	MI
RENVILLE		62.0	45.0	37	1	12.1	106	0.1 -3.4	3	3	MI
MEDORA		62.0	37.6	67	1	12.9	113	-0.6 -1.3	3	4	
SCEPTRE		60.7	42.2	59	0	12.1	106	-0.1 -4.0	3	3	MI
D8460		62.6	39.1	63	0	12.2	103	-0.2 -0.7	2	3	MI
D86398		62.0	40.5	59	0	12.3	98	-0.1 -1.7	3	3	MI
D86741		59.7	40.3	28	5	11.4	96	-1.4 -0.1	3	2	MI
D87121		62.3	35.0	82	0	12.5	98	0.4 -2.0	4	3	MJ
D87122		62.6	47.6	75	0	12.8	103	-0.3 -2.5	3	4	MI
D87130		63.1	43.3	73	0	12.3	107	-0.4 -2.9	3	3	MI
D87141		62.4	44.8	65	0	12.4	94	-0.1 -3.0	3	3	MI
D87240		60.0	41.7	71	0	12.3	94	-0.8 -0.2	4	3	MI
D87436		58.7	44.4	44	3	11.4	98	-2.1 -1.5	3	2	MJ
D87450		58.1	36.4	28	0	11.3	95	-0.9 -0.3	3	2	MJ
D88058		59.7	38.5	35	2	11.9	100	-0.5 -1.6	3	2	MI MI
D88273		62.2	41.3	62	0	12.6	110	-0.2 -2.4	4	4	
D88277		61.8	36.0	40	1	12.5	105	-1.1 -1.4	4	3	MI
D88284		61.6	39.8	63	0	12.6	103	-0.1 -2.7	6	4	
D88289		62.2	40.0	57	0	12.2	108	-0.3 -0.8	6	3	MI
D88303		60.3	37.9	33	3	11.6	100	-0.6 -1.9	6	3	MI
D88450		61.5	38.5	45	6	11.4	95	-0.7 -3.5	5	2	MI MJ
D88758		61.9	40.3	57	0	12.7	102	-1.2 -0.9	5	4	
D88793		60.9	43.1	73	0	13.1	105	-0.7 -1.6	5	4	
D86-1523		60.2	35.1	19	7	12.5	103	-1.6 -0.4	5	2	MI MI MI MI
D87-1534		58.4	33.2	27	6	12.4	96	-1.5 0.1	5	2	MI MI MI MI

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 61.0 38.0 0 12.5 65.7
MINOR FAULTING VALUES 58.8 35.9 5 12.5 62.7
MAJOR FAULTING VALUES 57.9 32.9 10 11.5 61.7

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=NORTH DAKOTA STATION=PROSPER NURSERY=UNIFORM

TABLE 16

VARIETY	STD	TEST		1000		SIZING		WHT		HARD	SEMO		DUST		MIXO	SCORE	DEFICIENCIES							
		WT	#/BU	K.WT	G.	LG	%	PRO	14%		NESS	%	EXTR	L			b	TW	KW	SM	WP	SX		
MINDUM		61.9		35.0		34	3	12.4		90		69.3		-0.6	-7.4	4								MI
STOA		59.5		29.6		33	1	13.1		74		67.4		2.6	-14.3	7								MJ
WARD	S	62.7		38.5		46	1	12.7		110		68.9		-0.2	-1.7	2								
RUGBY		62.2		34.8		35	2	12.7		101		67.7		-0.4	-1.3	1								
VIC	S	62.4		39.7		43	1	12.4		103		69.0		0.8	0.3	3								MI
LLOYD	S	56.2		31.2		7	10	13.2		94		63.1		-0.9	1.1	6								MI
MONROE		59.4		37.5		40	1	13.0		104		67.3		-1.9	-0.6	5								
RENVILLE		61.3		34.6		24	1	12.9		108		68.5		-0.6	-2.1	5								
MEDORA		60.8		36.1		34	1	13.2		104		66.3		-0.2	0.0	4								
SCPTRE		59.1		32.4		25	4	12.9		100		65.9		-0.1	-1.1	4								MI
D8460		60.3		32.3		19	4	13.0		103		65.9		-0.6	1.9	4								MI
D86398		61.5		35.8		26	1	12.5		95		66.7		-0.2	1.2	3								MI
D86741		59.6		33.2		21	3	12.2		94		66.1		-1.4	1.0	3								MI
D87121		61.6		41.7		55	0	12.7		103		68.0		-0.3	-1.0	4								MI
D87122		60.6		34.1		28	3	13.4		101		65.9		-0.6	-0.4	7								MI
D87130		62.3		39.2		41	0	12.7		106		67.1		-0.5	-1.3	6								
D87141		62.0		38.0		39	1	12.3		105		66.5		0.2	-1.1	5								MI
D87240		58.0		33.7		26	2	12.8		96		64.8		-1.0	2.4	6								MI
D87436		61.0		34.8		30	3	12.2		94		65.5		-0.5	-0.2	4								MI
D87450		58.1		36.5		18	3	12.5		98		65.7		-1.0	2.0	5								MI
D88058		58.7		34.6		18	2	13.0		96		64.2		-1.1	0.1	6								MI
D88273		60.0		31.2		12	3	13.1		97		66.0		-0.4	0.4	6								MJ
D88277		59.4		28.4		7	8	13.3		100		62.9		-1.6	2.1	7								MJ
D88284		60.1		30.7		17	4	13.4		107		64.5		-0.9	0.4	6								MJ
D88289		61.8		33.9		23	2	13.0		106		65.1		-1.6	1.8	5								MJ
D88303		61.2		36.8		26	3	12.8		100		66.3		-0.9	-0.5	5								MI
D88450		62.3		35.5		29	2	11.4		89		65.6		-0.2	-1.7	3								MJ
D88758		61.3		31.8		17	4	12.9		99		65.5		-0.7	1.9	5								MI
D88793		61.2		39.2		50	1	13.2		105		65.9		-0.9	-0.2	5								MI
D86-1523		58.2		28.6		5	11	14.0		96		63.6		-1.8	2.0	6								MI
D87-1534		59.5		36.9		17	8	12.9		94		66.9		-2.1	2.4	5								MI

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 60.4 36.5 4 12.8 67.0
MINOR FAULTING VALUES 58.2 34.4 9 12.5 64.0
MAJOR FAULTING VALUES 57.3 31.4 14 11.5 63.0

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

STATISTICAL EVALUATION OF UNIFORM REGIONAL NURSERY DATA

TABLE 17

VARIETY=D8460

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	60.77	2.62	54.90	64.10	6.84	4.30
K_WT	37.70	6.79	29.10	47.60	46.16	18.02
LARGE	45.33	23.83	15.00	75.00	568.06	52.58
SMALL	1.75	1.82	0.00	4.00	3.30	103.73
WHT_PRO	13.73	1.41	10.60	15.10	1.99	10.27
HARD	106.50	6.05	98.00	117.00	36.64	5.68
S_EXT	62.95	3.17	56.10	67.90	10.02	5.03
MIXO	3.42	1.08	2.00	6.00	1.17	31.72

VARIETY=D86-1523

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	60.25	3.13	55.00	63.90	9.78	5.19
K_WT	37.62	8.65	28.60	52.40	74.85	22.99
LARGE	38.58	33.18	4.00	86.00	1100.99	86.00
SMALL	4.83	4.99	0.00	15.00	24.88	103.20
WHT_PRO	14.07	1.35	11.20	16.50	1.82	9.60
HARD	104.83	7.44	95.00	121.00	55.42	7.10
S_EXT	60.81	2.72	54.80	63.60	7.39	4.47
MIXO	5.17	0.94	4.00	6.00	0.88	18.14

VARIETY=D86398

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	60.87	2.51	55.40	64.20	6.28	4.12
K_WT	40.97	6.39	31.20	51.00	40.88	15.61
LARGE	53.25	22.80	17.00	83.00	520.02	42.82
SMALL	0.58	0.67	0.00	2.00	0.45	114.61
WHT_PRO	13.67	1.43	10.50	15.70	2.06	10.49
HARD	104.67	9.21	94.00	118.00	84.79	8.80
S_EXT	61.91	3.85	52.60	66.90	14.85	6.23
MIXO	3.50	1.09	2.00	6.00	1.18	31.06

TABLE 18

VARIETY=D86741

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	60.56	2.60	56.10	63.80	6.75	4.29
K WT	39.27	7.93	30.80	51.50	62.90	20.19
LARGE	46.50	27.38	21.00	86.00	749.73	58.88
SMALL	2.58	2.61	0.00	6.00	6.81	101.02
WHT_PRO	13.02	1.17	11.20	14.60	1.36	8.96
HARD	101.17	9.37	89.00	116.00	87.79	9.26
S_EXT	63.03	2.59	58.10	66.90	6.71	4.11
MIXO	3.17	0.72	2.00	5.00	0.52	22.67

VARIETY=D87-1534

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	59.78	3.36	53.80	64.00	11.29	5.62
K WT	39.43	8.71	28.30	52.40	75.79	22.08
LARGE	47.67	28.28	9.00	88.00	799.88	59.33
SMALL	3.17	3.76	0.00	11.00	14.15	118.80
WHT_PRO	13.73	1.48	10.80	16.90	2.20	10.80
HARD	103.75	9.99	93.00	123.00	99.84	9.63
S_EXT	62.73	3.23	57.10	67.30	10.43	5.15
MIXO	5.00	1.13	3.00	7.00	1.27	22.56

VARIETY=D87121

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.65	1.67	58.70	63.40	2.79	2.71
K WT	43.37	6.65	32.60	53.20	44.28	15.34
LARGE	66.17	19.74	25.00	89.00	389.61	29.83
SMALL	0.17	0.39	0.00	1.00	0.15	233.55
WHT_PRO	14.05	1.36	11.70	15.90	1.84	9.65
HARD	105.83	10.15	91.00	126.00	103.06	9.59
S_EXT	63.53	3.97	52.50	68.00	15.78	6.25
MIXO	4.50	1.17	3.00	6.00	1.36	25.95

TABLE 19

VARIETY=D87122

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.39	2.12	57.10	63.50	4.50	3.46
K_WT	42.32	7.46	30.10	52.60	55.68	17.63
LARGE	63.08	23.81	22.00	88.00	566.99	37.75
SMALL	0.67	0.98	0.00	3.00	0.97	147.71
WHT_PRO	13.99	1.06	11.80	15.30	1.12	7.57
HARD	106.08	8.54	96.00	123.00	72.99	8.05
S_EXT	63.52	2.29	59.50	67.50	5.25	3.61
MIXO	4.42	1.68	3.00	7.00	2.81	37.96

VARIETY=D87130

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.90	1.80	58.40	64.10	3.23	2.90
K_WT	43.83	6.40	34.10	52.10	40.92	14.59
LARGE	62.83	22.53	25.00	88.00	507.61	35.86
SMALL	0.17	0.39	0.00	1.00	0.15	233.55
WHT_PRO	14.05	1.38	11.40	16.00	1.90	9.81
HARD	109.92	8.47	98.00	127.00	71.72	7.70
S_EXT	62.67	3.61	53.20	67.10	13.05	5.77
MIXO	4.58	1.56	2.00	7.00	2.45	34.13

VARIETY=D87141

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.23	1.94	57.60	63.70	3.76	3.16
K_WT	41.21	6.76	31.90	50.80	45.64	16.39
LARGE	51.83	23.13	17.00	80.00	534.88	44.62
SMALL	1.00	1.28	0.00	4.00	1.64	127.92
WHT_PRO	13.96	1.54	10.90	16.30	2.38	11.04
HARD	106.25	8.44	94.00	122.00	71.30	7.95
S_EXT	60.99	4.54	50.30	66.90	20.57	7.44
MIXO	4.50	1.45	2.00	7.00	2.09	32.13

TABLE 20

VARIETY=D87240

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	59.42	2.36	54.60	63.20	5.58	3.98
K_WT	43.12	7.64	30.40	54.30	58.43	17.73
LARGE	63.92	21.48	25.00	88.00	461.54	33.61
SMALL	0.33	0.78	0.00	2.00	0.61	233.55
WHT_PRO	13.68	1.27	11.00	15.70	1.61	9.29
HARD	105.50	7.45	94.00	118.00	55.55	7.06
S_EXT	62.37	2.75	58.30	66.90	7.58	4.42
MIXO	5.08	1.38	3.00	7.00	1.90	27.13

VARIETY=D87436

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.21	2.30	57.40	64.10	5.29	3.76
K_WT	41.29	8.49	31.20	55.90	72.11	20.57
LARGE	54.08	26.11	18.00	91.00	681.72	48.28
SMALL	1.75	1.91	0.00	6.00	3.66	109.31
WHT_PRO	13.25	1.37	10.90	15.10	1.87	10.32
HARD	107.08	9.27	94.00	125.00	85.90	8.66
S_EXT	62.37	2.50	57.80	65.50	6.26	4.01
MIXO	4.33	1.23	3.00	6.00	1.52	28.41

VARIETY=D87450

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	59.04	2.79	54.60	63.30	7.77	4.72
K_WT	40.66	8.56	31.20	54.10	73.28	21.05
LARGE	40.50	28.32	10.00	84.00	802.09	69.93
SMALL	1.58	1.38	0.00	4.00	1.90	87.09
WHT_PRO	13.02	1.20	10.90	14.80	1.44	9.22
HARD	104.08	7.95	89.00	113.00	63.17	7.64
S_EXT	62.41	2.53	58.10	65.80	6.39	4.05
MIXO	4.25	1.42	2.00	7.00	2.02	33.46

TABLE 21

VARIETY=D88058

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	59.97	3.38	54.10	64.20	11.40	5.63
K_WT	40.90	9.23	30.50	54.60	85.22	22.57
LARGE	47.25	28.66	15.00	88.00	821.11	60.65
SMALL	1.42	1.38	0.00	4.00	1.90	97.34
WHT_PRO	13.44	1.05	11.70	15.20	1.10	7.80
HARD	104.67	8.91	95.00	119.00	79.33	8.51
S_EXT	61.26	2.83	55.70	64.30	8.00	4.62
MIXO	4.50	1.38	3.00	7.00	1.91	30.70

VARIETY=D88273

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	60.93	2.34	55.80	63.90	5.48	3.84
K_WT	39.56	7.18	30.10	50.80	51.59	18.16
LARGE	50.92	24.71	12.00	85.00	610.81	48.54
SMALL	1.08	1.16	0.00	3.00	1.36	107.49
WHT_PRO	14.28	1.27	11.90	16.20	1.61	8.90
HARD	110.25	8.44	97.00	126.00	71.30	7.66
S_EXT	62.28	3.86	55.40	67.70	14.91	6.20
MIXO	5.08	1.38	3.00	8.00	1.90	27.13

VARIETY=D88277

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.07	2.75	55.50	64.10	7.58	4.51
K_WT	37.55	7.35	27.40	49.50	54.07	19.58
LARGE	44.25	26.33	7.00	82.00	693.48	59.51
SMALL	2.42	2.81	0.00	8.00	7.90	116.32
WHT_PRO	13.86	1.31	10.90	15.50	1.72	9.45
HARD	109.83	9.09	99.00	129.00	82.70	8.28
S_EXT	60.95	3.05	56.50	66.10	9.28	5.00
MIXO	4.92	1.51	3.00	8.00	2.27	30.61

TABLE 22

VARIETY=D88284

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	60.72	2.33	56.60	63.70	5.44	3.84
K_WT	39.57	7.43	30.60	52.60	55.14	18.76
LARGE	56.08	23.32	17.00	86.00	543.72	41.58
SMALL	1.17	1.47	0.00	4.00	2.15	125.73
WHT_PRO	14.24	1.25	11.60	15.90	1.57	8.79
HARD	110.42	7.60	103.00	127.00	57.72	6.88
S_EXT	60.89	3.48	54.00	65.60	12.08	5.71
MIXO	5.08	1.31	3.00	7.00	1.72	25.80

VARIETY=D88289

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.13	2.23	56.60	63.50	4.96	3.64
K_WT	39.80	7.25	30.10	50.00	52.52	18.21
LARGE	50.75	24.18	14.00	83.00	584.75	47.65
SMALL	1.42	1.44	0.00	4.00	2.08	101.89
WHT_PRO	14.38	1.60	11.70	16.90	2.55	11.12
HARD	111.75	9.15	102.00	131.00	83.66	8.18
S_EXT	61.49	2.94	56.80	65.10	8.63	4.78
MIXO	5.08	1.00	3.00	6.00	0.99	19.60

VARIETY=D88303

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	60.38	3.05	54.50	63.80	9.27	5.04
K_WT	40.53	9.21	27.50	55.60	84.91	22.73
LARGE	46.08	28.11	9.00	87.00	790.27	61.00
SMALL	2.75	3.74	0.00	12.00	14.02	136.17
WHT_PRO	13.78	1.36	11.50	15.60	1.85	9.86
HARD	107.25	11.29	90.00	128.00	127.48	10.53
S_EXT	61.55	3.27	56.50	66.30	10.67	5.31
MIXO	5.08	1.31	2.00	7.00	1.72	25.80

TABLE 23

VARIETY=D88450

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	60.83	2.98	55.50	64.30	8.88	4.90
K_WT	39.56	7.97	28.90	51.30	63.55	20.15
LARGE	47.75	25.82	17.00	87.00	666.75	54.08
SMALL	2.83	2.72	0.00	8.00	7.42	96.17
WHT_PRO	13.17	1.60	10.60	16.50	2.55	12.13
HARD	97.17	7.60	83.00	107.00	57.79	7.82
S_EXT	61.49	3.26	56.80	65.60	10.65	5.31
MIXO	4.08	1.16	2.00	6.00	1.36	28.52

VARIETY=D88758

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.10	2.50	56.30	64.50	6.27	4.10
K_WT	38.98	6.87	28.80	48.50	47.24	17.63
LARGE	50.25	25.01	17.00	84.00	625.30	49.76
SMALL	1.17	1.27	0.00	4.00	1.61	108.63
WHT_PRO	14.21	1.27	12.00	16.30	1.62	8.95
HARD	108.08	8.30	98.00	124.00	68.81	7.67
S_EXT	62.36	3.23	56.50	67.10	10.41	5.17
MIXO	4.92	0.90	3.00	6.00	0.81	18.31

VARIETY=D88793

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	60.52	2.55	55.80	63.80	6.48	4.21
K_WT	42.65	7.32	33.10	55.20	53.60	17.17
LARGE	63.33	22.54	29.00	91.00	508.06	35.59
SMALL	0.58	0.90	0.00	3.00	0.81	154.34
WHT_PRO	14.54	1.45	11.40	16.30	2.09	9.95
HARD	110.58	7.91	105.00	130.00	62.63	7.16
S_EXT	62.04	3.07	57.70	66.50	9.45	4.96
MIXO	5.17	0.72	4.00	6.00	0.52	13.89

TABLE 24

VARIETY=LLOYD

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	59.20	3.59	53.40	63.40	12.92	6.07
K_WT	41.63	9.24	30.00	54.10	85.31	22.19
LARGE	44.67	28.18	7.00	86.00	794.24	63.09
SMALL	2.58	3.58	0.00	10.00	12.81	138.55
WHT_PRO	13.75	1.60	11.10	16.90	2.55	11.62
HARD	105.17	14.13	86.00	133.00	199.79	13.44
S_EXT	61.62	2.90	55.80	66.50	8.43	4.71
MIXO	4.00	1.21	2.00	6.00	1.45	30.15

VARIETY=MEDORA

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.57	2.16	57.00	65.00	4.66	3.50
K_WT	40.59	6.12	33.00	50.50	37.47	15.08
LARGE	57.75	20.57	29.00	84.00	422.93	35.61
SMALL	0.83	1.03	0.00	3.00	1.06	123.58
WHT_PRO	14.35	1.34	11.70	16.20	1.80	9.36
HARD	113.33	8.71	104.00	132.00	75.88	7.69
S_EXT	61.62	2.65	56.70	66.30	7.04	4.31
MIXO	3.75	0.97	3.00	6.00	0.93	25.74

VARIETY=MINDUM

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.37	2.68	55.10	64.70	7.17	4.36
K_WT	38.09	6.82	27.00	52.60	46.45	17.89
LARGE	48.67	22.06	9.00	86.00	486.61	45.33
SMALL	1.50	2.71	0.00	9.00	7.36	180.91
WHT_PRO	13.93	1.64	10.60	17.30	2.68	11.76
HARD	105.50	11.60	90.00	126.00	134.64	11.00
S_EXT	62.94	3.42	57.80	69.30	11.72	5.44
MIXO	2.33	0.78	1.00	4.00	0.61	33.36

TABLE 25

VARIETY=MONROE

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	60.85	2.38	55.40	64.10	5.68	3.92
K_WT	42.53	6.23	32.80	53.50	38.83	14.65
LARGE	62.58	20.99	33.00	88.00	440.63	33.54
SMALL	0.33	0.65	0.00	2.00	0.42	195.40
WHT_PRO	13.79	1.12	11.80	15.40	1.25	8.09
HARD	105.83	7.96	95.00	122.00	63.42	7.52
S_EXT	63.30	3.20	55.80	68.50	10.25	5.06
MIXO	4.25	1.06	3.00	6.00	1.11	24.83

VARIETY=RENVILLE

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.12	1.93	57.60	63.60	3.73	3.16
K_WT	39.98	6.62	29.60	50.30	43.89	16.57
LARGE	41.00	21.52	10.00	72.00	463.09	52.49
SMALL	1.75	1.86	0.00	5.00	3.48	106.56
WHT_PRO	13.83	1.41	10.80	15.60	1.99	10.21
HARD	110.83	8.17	100.00	128.00	66.70	7.37
S_EXT	64.92	2.83	59.00	68.90	8.01	4.36
MIXO	4.08	1.73	3.00	8.00	2.99	42.36

VARIETY=RUGBY

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.58	1.78	58.60	63.70	3.17	2.89
K_WT	39.93	5.57	32.60	48.30	31.07	13.96
LARGE	49.67	20.41	16.00	72.00	416.42	41.09
SMALL	1.08	1.00	0.00	3.00	0.99	91.96
WHT_PRO	14.01	1.27	11.40	15.80	1.62	9.10
HARD	110.17	10.13	96.00	127.00	102.70	9.20
S_EXT	62.54	4.21	51.60	67.70	17.76	6.74
MIXO	1.58	0.51	1.00	2.00	0.27	32.52

TABLE 26

VARIETY=SCEPTRE

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	60.14	2.53	55.80	63.50	6.40	4.21
K_WT	38.98	7.47	29.10	52.40	55.78	19.16
LARGE	50.25	22.81	19.00	84.00	520.39	45.40
SMALL	1.50	1.62	0.00	4.00	2.64	108.25
WHT_PRO	13.78	1.52	10.90	16.10	2.30	11.01
HARD	105.50	10.26	93.00	126.00	105.36	9.73
S_EXT	62.58	2.32	60.10	66.20	5.41	3.71
MIXO	3.92	1.08	3.00	6.00	1.17	27.67

VARIETY=STOA

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	59.46	2.10	55.90	62.40	4.43	3.54
K_WT	33.54	4.42	28.30	41.30	19.56	13.18
LARGE	47.83	17.10	25.00	78.00	292.33	35.74
SMALL	0.67	0.89	0.00	2.00	0.79	133.14
WHT_PRO	13.82	0.84	11.90	14.60	0.71	6.10
HARD	77.08	6.87	66.00	90.00	47.17	8.91
S_EXT	64.59	2.81	59.10	67.90	7.90	4.35
MIXO	6.33	0.98	5.00	8.00	0.97	15.55

VARIETY=VIC

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.82	1.46	59.30	63.80	2.15	2.37
K_WT	43.23	6.22	35.50	53.20	38.72	14.39
LARGE	58.83	21.56	24.00	85.00	464.88	36.65
SMALL	0.42	0.51	0.00	1.00	0.27	123.58
WHT_PRO	13.78	1.28	11.50	15.60	1.65	9.32
HARD	110.50	8.97	96.00	127.00	80.45	8.12
S_EXT	64.87	3.05	58.70	69.00	9.29	4.70
MIXO	3.58	1.08	2.00	6.00	1.17	30.24

TABLE 27

VARIETY=WARD

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VARIANCE	CV
TW	61.64	1.82	58.70	63.60	3.30	2.94
K_WT	40.24	5.38	33.30	48.10	28.99	13.38
LARGE	56.00	18.77	23.00	78.00	352.18	33.51
SMALL	0.67	0.89	0.00	2.00	0.79	133.14
WHT_PRO	14.21	1.37	11.50	16.30	1.88	9.66
HARD	114.08	8.77	99.00	133.00	76.99	7.69
S_EXT	63.42	2.83	58.90	68.90	8.00	4.46
MIXO	2.00	0.43	1.00	3.00	0.18	21.32

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE-CALIFORNIA STATION=IMPERIAL VALLEY NURSERY=ADVANCED

TABLE 28

VARIETY	STD	TEST		1000		SIZING		WHT		HARD-		FALL		TOTL		SEMO		DUST		MIXO
		WT	#/BU	K.WT	G.	LG	%	SM	%	NESS	SEC	NO	SEC	EXTR	%	SPK	ASH	L	b	
MEXICALI 75		62.2		53.5		86		1	1.66	13.3	107	400		81.7		66.6		73		6
ALDURA	S	61.9		46.3		69		0	1.77	13.8	109	400		80.1		63.7		80		1
YAVAROS 79		64.7		52.1		84		0	1.61	12.9	110	400		81.1		65.5		73		2
WESTBRED 881	S	61.8		51.5		87		0	1.76	14.8	110	400		80.2		64.2		90		7
WESTBRED TURBO		62.3		46.5		79		0	1.66	12.8	93	400		81.2		64.6		60		3
ALTAR 84		63.6		41.3		66		0	1.80	13.3	106	400		81.8		66.1		73		3
UC781		62.2		46.1		73		0	1.69	13.6	110	400		79.9		64.1		73		2
NUDURA		63.7		53.2		92		0	1.80	14.9	114	400		79.9		64.9		77		4
REVA		62.1		45.2		75		0	1.96	13.1	104	400		80.9		64.6		80		4
DUREX		61.5		50.3		89		0	1.74	14.8	107	400		80.8		63.6		73		7
CONT D5456		61.3		42.9		70		0	1.77	13.8	106	400		80.9		65.1		87		4
CONT D5765		61.6		42.9		60		2	1.74	13.2	119	400		80.4		64.2		73		3
UC 907		63.3		52.6		90		0	1.80	14.0	115	400		81.1		65.8		73		2
UC 908		63.7		55.6		92		0	1.74	14.3	121	400		80.8		65.8		93		2
UC 909		63.4		48.5		85		0	1.80	14.8	115	400		78.9		63.8		87		2
UC 910		64.4		43.9		84		0	1.81	14.4	117	400		79.5		63.4		73		1
WPB 8001		61.1		43.3		70		0	1.80	13.5	108	400		78.9		63.2		73		3
WPB 8002		60.1		36.9		66		0	1.85	13.6	104	400		79.6		63.6		63		3
WPB 8003		60.1		45.0		82		0	1.89	14.6	107	400		80.0		63.6		33		6
CONT D5476		61.9		45.8		76		0	1.73	13.0	101	400		80.3		64.2		40		4
CONT D8869		61.7		46.1		69		0	1.73	13.9	119	400		80.4		66.0		83		5
ALDENTE		62.3		47.1		84		0	1.72	13.6	111	400		80.1		64.8		67		5
WPB 8004		60.3		43.3		75		0	1.82	13.9	109	400		79.4		63.6		53		4
WPB 8005		61.3		40.0		66		1	1.91	14.2	117	400		79.5		63.3		73		4
WPB 8006		60.6		42.0		51		0	1.90	13.7	110	400		80.8		64.0		50		5
WPB 8007		61.2		45.7		76		0	1.86	13.2	109	400		81.1		65.8		37		5
WPB 8008		62.0		51.8		86		0	1.75	14.0	118	400		79.9		62.3		57		6
FMC D7764		62.0		47.1		85		0	1.76	14.0	120	400		80.8		64.3		90		5
FMC D8217		62.7		42.2		86		0	1.78	14.4	114	400		80.6		63.9		67		6
FMC D9474		61.8		45.8		83		0	1.92	14.0	118	400		80.7		63.9		53		7
APB D03-21		62.2		53.2		91		0	1.76	13.9	108	400		79.7		63.8		97		7
APB D03-5		63.9		42.0		74		0	1.73	13.5	111	400		80.3		65.1		80		5
APB D03-4		61.6		49.8		81		0	1.72	14.3	116	400		79.0		62.6		53		5
APB D#8		61.6		44.6		76		0	1.92	15.1	115	400		80.0		64.4		73		7
APB D-90-5		57.4		26.3		27		13	1.98	14.5	103	400		79.2		61.0		60		2

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=CALIFORNIA STATION=IMPERIAL VALLEY NURSERY=ADVANCED

TABLE 28 CONTD.

VARIETY	STD	SEMO PRO %	VIS COL L	COOK WT G.	FIRM- NESS G.	RES G.	SCORE ***							DEFICIENCIES						
							TW KW SM WP TX SX SK SP FR							MI						
MEXICALI 75		12.4	-3.6	-4.4	34.3	5.77	6.3	4												
ALDURA	S	12.8	-4.7	-4.3	34.5	5.98	8.0	4												
YAVAROS 79		11.5	-1.3	-9.1	34.0	5.18	7.2	3												
WESTBRED 881	S	14.0	-2.9	-1.7	31.6	7.24	6.2	4												
WESTBRED TURBO		11.9	2.2	-2.9	35.1	5.75	6.8	4												
ALTAR 84		12.8	-2.9	-5.1	33.3	6.00	7.3	3												
UC781		12.9	-3.4	-3.7	34.5	5.94	6.0	4												
NUDURA		13.9	-3.4	-1.2	33.7	7.26	7.0	4												
REVA		12.3	-2.7	-1.9	32.9	5.88	6.9	4												
DUREX		13.9	-3.6	-2.7	31.0	7.45	6.2	4												
CONT D5456		13.0	-4.8	-3.9	32.0	5.27	7.1	3												
CONT D5765		12.3	-5.4	-6.2	33.5	4.97	6.8	2												
UC 907		12.8	-4.1	-5.2	32.5	6.29	6.6	4												
UC 908		12.9	-4.8	-5.9	33.3	6.48	6.5	4												
UC 909		13.6	-2.9	-2.0	32.2	7.43	5.9	4												
UC 910		13.3	-3.7	0.9	34.2	5.94	6.8	4												
WPB 8001		13.0	-4.3	-0.4	33.1	6.39	6.4	3												
WPB 8002		13.0	-4.7	-0.2	32.9	6.26	6.7	3												
WPB 8003		14.2	-4.0	-2.2	32.6	6.78	6.5	4												
CONT D5476		12.2	-4.0	-1.0	33.2	5.92	6.9	4												
CONT D8869		13.3	-3.2	-2.5	32.0	6.26	6.4	4												
ALDENTE		12.4	-3.3	-1.8	33.0	6.00	6.5	4												
WPB 8004		13.2	-3.4	1.3	33.1	6.13	7.0	3												
WPB 8005		13.4	-5.4	0.3	32.0	6.72	6.8	3												
WPB 8006		12.7	-3.2	1.8	32.9	6.83	6.3	3												
WPB 8007		12.0	-5.0	2.2	33.1	6.59	7.3	4												
WPB 8008		13.4	-3.9	-1.5	32.5	7.47	6.5	4												
FMC D7764		11.7	-4.1	-4.4	32.2	6.35	6.3	4												
FMC D8217		13.8	-5.1	-3.6	32.1	6.50	6.2	3												
FMC D9474		13.6	-5.1	0.2	32.8	6.42	6.5	4												
APB D03-21		13.1	-4.5	0.0	31.8	6.63	6.5	4												
APB D03-5		11.7	-2.8	2.3	32.6	6.83	6.6	3												
APB D03-4		13.4	-4.0	0.0	33.3	6.67	5.8	4												
APB D#8		14.5	-4.0	-2.0	32.3	5.59	6.7	4												
APB D-90-5		14.2	-4.6	2.3	34.7	5.34	6.5	1												

DEFICIENCIES

AVG OF STANDARDS 61.8 48.9 0 14.3 80.1 63.9 85 13.4 6.61

MINOR FAULTING VALUES 59.6 46.8 5 12.5 77.6 60.9 95 11.5 5.11

MAJOR FAULTING VALUES 58.7 43.8 10 11.5 76.6 59.9 100 11.0 4.36

**EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

A Minolta CR-310 series ChromaMeter was used to calculate an absolute value of a standard semolina and spaghettini sample in the L a* b* color system. In this system L* refers to lightness; a* and b* are the chromaticity coordinates. (b* values relate to the blue - yellow chromaticity coordinates.) After this target value was obtained; the nursery samples were measured in the difference mode. Therefore; a negative value indicates a value below the standard or target value. The higher the b* value, the more yellow the perceived color.

The target values for this nursery are:

Semolina: L* 85.3 b* 33.6

Spaghettini: L* 63.8 b* 48.9

Example: Aldura semolina color: L* 85.3 - 1.5 = 83.8 b* 33.6 - 0.2 = 33.4

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=CALIFORNIA STATION=DAVIS NURSERY=ADVANCED

TABLE 29

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SM %	WHT ASH %	WHT PRO %	HARD- NESS	FALL NO SEC	TOTL EXTR %	SEMO EXTR %	SPK	SEMO ASH %	DUST COLOR		MIXO SCORE
														L	b	
MEXICALI 75		62.2	51.0	84	0	1.59	12.4	128	400	80.8	62.4	40	.72	-1.1	-3.0	6
ALDURA	S	62.0	45.7	69	0	1.65	13.9	141	400	82.0	65.8	57	.73	-1.5	-0.2	2
YAVAROS		65.4	53.8	85	0	1.47	12.4	142	400	82.2	67.4	99	.68	-0.5	-6.6	3
WESTBRED 881	S	61.7	49.3	90	0	1.67	14.1	134	400	80.8	64.3	77	.74	-2.2	-2.0	6
WESTBRED TURBO		62.2	48.8	79	0	1.57	13.4	141	400	80.8	65.0	43	.71	-1.6	-2.0	6
ALTAR 84		64.3	42.2	61	0	1.55	12.5	146	400	82.3	66.2	70	.70	-9.7	-5.6	4
UC 781		61.3	39.8	45	0	1.66	12.8	140	400	81.3	63.3	43	.71	-1.8	-1.9	2
NUDURA		64.2	53.2	90	0	1.66	13.7	136	400	81.3	65.1	50	.75	-1.9	-1.5	7
REVA		62.9	46.9	77	0	1.74	13.6	133	400	80.4	63.7	53	.79	-2.0	-0.6	6
DUREX		61.7	54.3	88	0	1.58	14.3	140	400	80.6	62.5	83	.74	-2.7	-1.4	7
CONT D5456		62.8	43.7	73	0	1.59	13.6	141	400	80.6	64.0	90	.69	-3.1	-2.7	3
CONT D5765		62.3	44.4	59	1	1.57	12.5	125	400	81.7	64.6	70	.70	-2.3	-2.4	3
UC 907		63.7	49.8	86	0	1.67	12.9	121	399	81.4	64.8	53	.77	-1.7	-2.7	3
UC 908		63.2	51.5	83	0	1.70	13.5	121	393	81.3	64.6	63	.77	-1.0	-2.6	2
UC 909		63.3	47.8	78	0	1.66	14.3	126	400	79.7	63.4	50	.72	-0.2	-2.5	2
UC 910		64.5	45.5	79	0	1.66	13.4	124	394	80.9	63.2	53	.71	-1.0	1.2	1
WPB 8001		61.5	44.1	69	0	1.66	13.7	121	400	80.0	63.0	40	.73	-0.1	-0.6	5
WPB 8002		62.5	45.0	78	0	1.58	13.8	127	400	80.6	63.4	50	.73	0.0	0.5	6
WPB 8003		62.3	56.5	91	0	1.60	14.4	137	400	80.5	63.7	27	.74	-0.3	-2.2	7
CONT D5476		62.1	45.8	71	0	1.62	12.9	124	400	80.8	63.0	40	.75	-0.2	1.2	6
CONT D8869		60.6	44.2	55	0	1.67	13.9	130	400	80.6	63.9	30	.74	0.3	-1.0	7
ALDENTE		62.1	49.8	81	0	1.56	14.0	130	400	81.4	64.1	30	.71	-0.3	-2.0	5
WPB 8004		62.8	50.0	88	0	1.58	13.7	136	400	79.8	62.9	47	.69	0.2	-1.1	6
WPB 8005		64.0	50.8	83	0	1.58	13.7	130	400	80.5	64.1	43	.70	-0.5	-0.4	5
WPB 8006		64.0	48.8	77	0	1.54	12.8	138	400	81.5	65.1	50	.71	-1.0	-1.0	4
WPB 8007		62.7	47.1	84	0	1.56	13.3	131	400	81.3	64.8	33	.75	-0.5	2.9	6
WPB 8008		62.6	54.1	86	0	1.62	13.6	131	400	80.3	64.5	43	.75	-0.4	0.6	7
FMC D7764		61.1	45.7	74	0	1.62	13.8	130	400	82.1	63.9	47	.74	-0.9	-2.4	7
FMC D8217		63.0	43.9	78	0	1.56	14.4	132	400	82.1	63.4	43	.74	-1.3	-0.5	7
FMC D9474		62.1	46.1	78	0	1.70	14.2	127	400	81.4	64.2	53	.78	-1.7	-2.8	8
APB D03-21		61.9	52.4	88	0	1.63	13.5	134	400	80.9	64.0	67	.76	-1.1	0.4	7
APB D03-5		64.5	47.8	81	0	1.67	13.7	125	400	82.0	64.7	57	.72	-0.3	-1.0	7
APB D03-4		62.1	46.3	80	0	1.60	13.5	138	400	81.2	63.8	50	.69	-0.2	0.0	7
APB D#8		61.9	47.6	71	0	1.74	14.1	133	400	82.9	65.2	73	.76	-1.0	-2.3	7
APB D-90-5		61.0	36.4	35	8	1.60	12.9	124	400	79.5	62.5	67	.76	-2.2	1.2	2

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=CALIFORNIA STATION=DAVIS NURSERY=ADVANCED

TABLE 29 CONTD

VARIETY	STD	SEMO PRO %	VIS COL	COOK WT	FIRM-NESS	RES G.	DEFICIENCIES									
							SCORE ***	TW	KW	SM	WP	TX	SX	SK	SP	FR
MEXICALI 75	11.4	13.1	-3.2	-3.0	33.9	6.05	7.1	2			MI					MI
ALDURA	S	13.1	-3.2	-3.0	33.9	6.05	7.1	4								
YAVAROS		11.5	-1.8	-8.1	35.3	5.68	7.0	1			MI					MI
WESTBRED 881	S	13.1	-2.7	-2.5	31.9	6.74	6.9	4								MI
WESTBRED TURBO		13.1	-2.2	-2.0	31.6	5.85	6.2	4								
ALTAR 84		11.7	-3.2	-5.4	32.2	5.34	6.2	2			MI					
UC 781		12.0	-2.6	-1.2	33.6	5.23	6.9	3								
NUDURA		12.9	-2.6	-0.2	32.9	6.39	6.5	4			MJ					
REVA		12.3	-2.5	-3.4	33.6	6.29	7.2	4								
DUREX		13.2	-2.4	-0.7	32.9	6.46	6.4	3								
CONT D5456		12.5	-3.2	-5.4	32.9	5.57	6.2	3			MI					MJ
CONT D5765		11.9	-4.0	-5.2	32.0	5.46	5.8	3			MI					MJ
UC 907		11.6	-3.0	-6.8	33.3	6.05	6.8	4								
UC 908		12.6	-3.4	-5.7	32.7	6.63	6.6	4								
UC 909		13.4	-3.3	-2.7	32.8	6.26	6.3	4								
UC 910		12.7	-2.3	-2.1	32.8	5.34	6.9	4								
WPB 8001		13.1	-2.8	-0.3	33.0	5.90	7.0	4			MI					
WPB 8002		12.9	-2.9	-0.3	33.8	6.11	6.9	4			MI					
WPB 8003		14.0	-2.9	-3.7	32.0	6.93	6.7	4								
CONT D5476		11.9	-2.1	-0.8	33.3	5.51	6.8	4								
CONT D8869		13.7	-2.2	-0.5	32.2	6.78	6.6	4			MI					
ALDENTE		12.5	-2.5	-2.0	33.1	5.64	7.1	4								
WPB 8004		12.8	-2.7	-1.0	33.2	6.24	6.4	4								
WPB 8005		12.8	-2.6	0.8	31.9	5.94	6.4	4								
WPB 8006		12.1	-2.6	-0.3	32.1	5.53	6.4	4								
WPB 8007		12.4	-3.6	2.1	33.2	5.92	6.5	4								
WPB 8008		13.1	-2.1	2.6	32.0	6.50	6.4	4								
FMC D7764		13.1	-1.6	-1.7	31.5	6.78	6.9	4								
FMC D8217		13.7	-3.5	-1.6	32.8	5.96	6.1	4			MI					
FMC D9474		13.7	-3.7	-3.2	31.2	7.11	6.5	4								
APB D03-21		10.6	-2.8	2.5	31.7	5.96	6.9	2								
APB D03-5		12.9	-1.3	2.6	33.0	6.54	7.1	4								
APB D03-4		12.7	-2.1	2.2	32.2	6.65	6.2	4								
APB D#8		13.5	-2.2	-0.2	31.9	6.83	6.5	4								
APB D-90-5		12.5	-3.7	0.4	33.2	5.42	6.4	3			MJ					

DEFICIENCIES

AVG OF STANDARDS 61.8 47.5 0 14.0 81.4 65.0 77 13.1 6.39

MINOR FAULTING VALUES 59.6 45.4 5 12.5 78.9 62.0 77 11.5 4.89

MAJOR FAULTING VALUES 58.7 42.4 10 11.5 77.9 61.0 82 11.0 4.14

**EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

A Minlota CR-310 series ChromaMeter was used to calculate an absolute value of a standard semolina and spaghetti sample in the L a* b* color system. In this system L* refers to lightness; a* and b* are the chromaticity coordinates. (b* values relate to the blue - yellow chromaticity difference mode.) After this target value was obtained; the nursery samples were measured in the higher the b* value, the more yellow the perceived color. The target values for this nursery are:

Semolina: L* 85.3 b* 33.6
Spaghetti: L* 63.8 b* 48.9

Example: Mexicali 75 semolina: L* 85.3 -1.1 = 84.2 b* 33.6 - 3.0 = 30.6

**Mexicali 75 was not processed further due to extruder malfunction.

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=OREGON STATION=PENDELTON NURSERY=ADVANCED

TABLE 30

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG SM % %	WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST		MIXO	SCORE ***	DEFICIENCIES			
								L	b			TW	KW	SM	WP SX
ND VIC	S	62.0	49.0	70	13.7	130	67.6	0.0	0.0	6	4				
OR4870576		62.0	52.1	86	14.3	119	65.4	0.5	-0.1	7	4				
ALTAR 84		62.7	41.8	58	13.0	105	64.7	0.0	-3.5	3	3			MJ	
CHEN		63.4	41.8	77	13.6	110	65.8	-0.7	-4.4	3	3			MJ	
OR4895303		63.6	51.3	84	13.9	113	64.3	0.4	-1.8	3	3				MI
OR4895340		62.8	41.7	62	14.1	105	67.3	-0.6	-3.9	3	3			MJ	
OR4895345		64.8	43.3	63	12.4	105	64.1	0.0	-3.7	4	1			MJ	MI
OR4880154		62.5	48.8	85	13.9	113	63.7	0.0	-3.7	5	3				MI
OR918114		61.2	48.1	67	14.1	109	53.2	1.7	-6.7	5	2				MJ
OR918120		61.5	38.3	42	15.0	119	57.1	-0.3	-5.5	2	1				MJ
OR918123		61.8	45.2	67	15.0	119	58.3	0.1	-5.2	2	2			MI	MJ
OR918127		62.2	43.5	65	14.7	122	59.0	0.4	-0.4	4	1			MJ	MJ
OR918128		59.0	33.9	16	14.3	125	59.6	0.1	-4.7	5	1			MJ	MJ
GYS "S"		62.2	35.7	33	12.8	111	60.2	-0.1	-2.1	3	1			MI	MJ
OLUS "S"		62.6	50.5	88	14.0	121	60.9	0.0	-2.9	3	2				MJ
OR4900092		62.3	43.9	75	12.9	121	56.1	0.8	-5.3	3	1			MJ	MJ
OR4900094		62.2	40.0	57	12.9	122	57.4	0.0	-3.2	3	1			MJ	MJ
OR4900101		63.1	42.9	62	12.4	110	60.6	0.9	-3.3	3	1			MI	MJ
OR4900137		62.6	51.8	88	15.1	124	59.0	1.3	-0.8	7	2			MI	MJ
BISU "S"		63.6	45.2	71	11.9	106	60.9	0.9	-5.5	3	1			MI	MJ
OR4910057		63.8	48.1	86	13.9	132	57.7	0.2	-6.9	3	2				MJ
OR4900115		63.8	44.8	70	13.1	121	54.5	0.7	-4.4	3	2			MI	MJ
OR4900116		64.1	43.7	64	12.5	123	59.0	1.0	-4.6	3	1			MI	MJ
BISU "S"		63.2	39.8	49	12.9	112	61.5	0.0	-2.8	4	1			MJ	MJ
OR4900132		63.1	44.6	60	14.0	116	55.8	0.4	-3.5	4	2			MI	MJ
OR4900134		63.7	38.3	47	12.8	115	62.2	0.1	-4.8	4	1			MJ	MJ
BISU "S"		63.1	42.7	58	12.4	95	60.0	2.3	-6.5	3	1			MI	MJ
OR4900179		63.0	42.6	55	14.2	119	62.8	0.2	-3.4	3	1			MJ	MJ
OR4900181		63.8	45.8	74	12.5	131	59.4	0.0	-4.1	2	1			MI	MJ
OR4910047		63.1	45.5	79	14.4	130	59.2	-0.8	-6.3	4	2			MI	MJ
OR4910051		61.6	37.6	23	14.1	122	58.7	0.8	-0.3	4	1			MJ	MJ
OR4910057		63.1	54.3	90	13.9	119	62.2	-0.1	-6.5	4	2			MJ	MJ
OR4910058		63.1	39.8	42	13.2	128	59.7	0.7	0.8	2	1			MJ	MJ

DEFICIENCIES
AVG OF STANDARDS
MINOR FAULTING VALUES
MAJOR FAULTING VALUES

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=OREGON STATION=PENDLETON NURSERY=PRELIMINARY

TABLE 31

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING		WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR		MIXO	SCORE ***	DEFICIENCIES			
				LG %	SM %				L	B			TW	KW	SM	SX
ND VIC	S	62.0	49.0	70	0	13.7	130	67.3	0.0	0.0	6	4				
WDUYT 2	QUILOFEN	63.4	42.7	51	2	11.1	119	60.1	0.0	-0.3	3	1	MJ	MJ		
3	ALTAR 84	65.3	44.2	75	0	10.8	118	58.9	1.2	-4.1	3	1	MI	MJ		
4		62.1	43.5	60	0	11.6	103	58.4	0.3	-5.3	3	1	MJ	MI		
5		63.8	37.5	15	0	9.8	107	61.2	2.0	-6.8	2	1	MJ	MJ		
6		65.4	46.3	72	0	11.2	120	58.3	0.9	-6.0	2	1	MI	MJ		
7		63.7	39.4	51	0	13.4	116	51.2	0.3	-6.1	3	1	MJ	MJ		
8		64.8	38.2	51	1	13.4	122	52.4	0.2	-6.5	3	1	MJ	MJ		
9		59.7	37.9	41	0	12.8	125	48.1	-0.7	-2.1	3	1	MI	MJ		
11		59.7	32.9	24	3	14.6	121	54.2	-1.4	-0.6	3	1	MI	MJ		
14		59.1	33.9	29	8	13.2	121	52.7	0.1	-2.1	4	1	MI	MJ		
15		57.6	31.7	22	3	15.0	113	45.8	-0.8	-0.9	2	1	MJ	MJ		
17		62.6	39.1	49	0	13.0	124	52.1	0.6	-3.2	1	1	MJ	MJ		
20		62.0	37.6	41	1	14.0	116	49.1	-0.3	-3.4	4	1	MJ	MJ		
21		59.5	35.8	31	1	14.4	127	47.9	-2.0	-2.3	2	1	MI	MJ		
22		62.6	43.7	69	0	13.0	109	50.0	-0.4	0.6	0	1	MJ	MJ		
23		60.6	38.3	32	2	13.5	121	49.1	1.1	-2.4	1	1	MJ	MJ		
24	RODUR	61.0	32.4	20	5	13.3	119	49.7	-0.4	-5.9	1	1	MJ	MI		
25	BRINDUR	61.3	31.4	12	8	14.2	118	52.1	0.0	4.3	5	1	MJ	MI		
26	OR4870576	63.3	50.0	83	0	14.4	116	57.7	1.0	1.6	7	2				

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 62.0 49.0 0 13.7 67.3
MINOR FAULTING VALUES 59.8 46.9 5 12.5 64.3
MAJOR FAULTING VALUES 58.9 43.9 10 11.5 63.3

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=OREGON STATION=PENDLETON NURSERY=PRELIMINARY

TABLE 32

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG SM % %	WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST		MIXO	SCORE ***	DEFICIENCIES			
								L	B			TW	KW	SM	WP SX
ND VIC	S	62.0	49.0	70	0	13.7	130	67.3	0.0	0.0	4				
WDPYT	2	64.5	41.5	68	0	8.2	104	58.4	2.8	-3.1	0		MJ		MJ MJ
	3	62.4	41.2	69	0	10.2	103	58.9	2.3	-5.9	0		MJ		MJ MJ
	5	65.4	41.3	66	0	11.8	120	56.5	1.0	-5.1	2		MJ		MI MJ
	6	64.6	40.7	64	0	11.9	118	52.1	1.2	-6.7	3		MJ		MI MJ
QUILOFEN	7	59.8	31.9	12	5	14.2	124	46.1	-0.6	0.6	4		MI MJ	MI	MJ
	9	65.4	40.8	70	0	11.4	118	54.5	1.1	-6.4	3		MJ		MJ MJ
	10	62.4	40.7	57	0	12.7	115	55.8	0.5	-4.9	6		MJ		MJ MJ
QUILOFEN	7	59.9	32.2	12	5	14.0	117	49.4	-0.9	1.6	6		MJ	MI	MJ
OR 916121	13	58.6	35.6	34	3	13.8	122	53.0	-0.4	0.8	4		MJ MJ		MJ MJ
OR 916123	14	59.4	37.2	32	2	13.9	127	53.6	-0.4	1.7	5		MI MJ		MJ MJ
OR 912539	18	64.1	37.2	41	0	14.0	127	53.0	-0.6	-4.0	6		MJ		MJ MJ
OR 912354	20	62.2	40.8	39	0	13.4	131	53.3	0.0	-3.7	5		MJ		MJ MJ
OR 912559	21	60.1	34.7	18	3	14.3	114	48.2	0.1	-1.2	4		MJ		MJ MJ
23		61.5	36.0	51	0	9.8	109	59.0	1.7	-0.7	0		MJ		MJ MJ
26 AMBRAL		64.3	36.9	51	0	10.3	113	55.7	0.9	-1.0	3		MJ		MJ MJ
27		62.2	42.0	58	0	10.5	116	56.6	-0.5	-3.8	3		MJ		MJ MJ
28		61.3	32.2	24	2	13.9	124	48.5	0.2	-2.0	5		MJ		MJ MJ
QUILOFEN	30	61.1	34.0	17	3	12.7	116	44.9	-0.4	1.3	4		MJ		MJ MJ
31		58.2	35.5	42	1	14.9	125	50.6	-1.0	2.1	6		MJ MJ		MJ MJ
32		62.2	38.3	44	0	12.3	120	47.6	0.0	-1.0	3		MJ		MJ MJ
OR4870576	34	62.4	48.8	74	0	14.2	123	53.0	0.6	2.1	7				MJ MJ

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 62.0 49.0 0 13.7 67.3
MINOR FAULTING VALUES 59.8 46.9 5 12.5 64.3
MAJOR FAULTING VALUES 58.9 43.9 10 11.5 63.3

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=OREGON STATION=PENDELETON NURSERY=PRELIMINARY

TABLE 33

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING		WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR		MIXO	SCORE ***	DEFICIENCIES							
				LG	SM				L	B			TW	KW	SM	WP	SX			
ND VIC	S	62.0	49.0	70	0	13.7	130	67.3	0.0	0.0	6	4								
OR 9437458		64.2	45.2	85	0	13.5	57	37.3	4.4	-12.9	3	2		MI						MJ
OR 4870576		61.8	51.0	90	0	14.6	113	49.4	1.9	-2.4	5	2								MJ
OR 9437549		62.3	52.6	88	0	14.4	122	46.7	1.7	-3.2	0	2								MJ
CHEN		64.3	48.1	87	0	12.8	130	54.2	1.0	-6.4	1	2								MJ
ALTAR 84		62.2	48.5	82	0	13.0	122	57.5	1.5	-4.1	3	2								MJ
OR 9437554		64.0	49.8	84	0	12.6	119	52.4	2.1	-7.4	0	2								MJ
OR 9437555		63.0	51.0	82	0	13.5	123	53.0	1.9	-6.7	2	2								MJ
OR 9437556		63.1	47.1	80	0	13.1	121	53.0	1.4	-8.1	2	2								MJ
OR 9437558		62.0	45.0	65	0	14.0	128	53.9	1.3	-8.8	2	2		MI						MJ
OR 9437559		62.8	47.8	82	0	14.0	126	53.0	0.9	-6.3	1	2								MJ
OR 9437561		61.8	61.0	98	0	15.0	133	49.7	1.5	-7.0	2	2								MJ
OR 9437562		64.1	58.5	98	0	15.0	118	49.1	1.9	-7.6	3	2								MJ
OR 9437564		63.6	55.6	96	0	14.7	134	53.0	1.4	-6.8	3	2								MJ
OR 9437565		61.5	46.7	77	0	14.7	111	54.3	2.1	-7.6	3	2		MI						MJ
OR 9437566		59.9	43.5	62	0	15.0	124	55.5	1.6	-3.3	3	1		MJ						MJ
OR 9437569		61.1	42.9	60	0	14.2	114	58.7	1.6	-0.7	2	1		MJ						MJ
OR 4920113		63.0	41.2	73	0	12.4	93	46.7	3.3	-12.0	3	1		MJ	MI					MJ

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 62.0 49.0 0 13.7 67.3
MINOR FAULTING VALUES 59.8 46.9 5 12.5 64.3
MAJOR FAULTING VALUES 58.9 43.9 10 11.5 63.3

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE=CALIFORNIA STATION=TULELAKE NURSERY=PRELIMINARY

TABLE 34

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	WHT PRO 14%	HARD NESS	SEMO EXTR %	DUST COLOR		MIXO	SCORE ***	DEFICIENCIES								
								L	b			TW	KW	SM	WP	SX				
ND VIC	S	62.0	49.0	70	0	13.7	130	68.6	0.0	0.0	6	4								
1-593		62.5	46.7	70	0	11.5	99	64.7	0.4	-5.8	2	1		MI						MJ MI
S-668		63.7	42.0	63	0	12.4	114	64.1	-1.5	-3.9	2	1		MJ						MI MJ
3-672		61.4	41.5	55	0	11.1	109	62.4	-0.1	-6.5	2	1		MJ						MJ MJ
4-679		62.8	44.6	62	1	12.4	117	62.0	-0.5	-4.5	1	1		MI						MI MJ
6-690		63.5	46.9	71	0	11.9	111	64.5	-0.3	-4.8	2	1		MI						MI MJ
7-697		61.8	44.1	65	0	12.1	106	62.4	-1.0	-3.4	2	1		MI						MI MJ
8-723		62.2	42.9	59	1	11.1	107	63.0	0.5	-6.5	1	1		MJ						MJ MJ
9-756		63.1	45.8	69	0	11.8	109	62.9	0.5	-3.9	1	1		MI						MJ MJ
10-775		63.0	48.8	75	0	11.4	109	64.1	1.1	-4.1	0	1		MJ						MI MJ
11-778		63.6	44.8	65	0	11.8	112	62.9	0.1	-3.1	1	1		MI						MI MJ
12-785		62.5	44.6	57	0	12.1	121	63.1	-0.5	-5.5	1	1		MI						MI MJ
13-790		63.1	46.3	69	0	11.9	114	63.7	-0.8	-4.1	1	1		MI						MI MJ
14-798		63.3	45.2	65	0	11.7	116	63.7	-0.5	-5.9	1	1		MI						MI MJ
15-800		62.6	45.2	70	0	12.2	109	62.5	-0.8	-6.1	2	1		MI						MI MJ
16-805		62.8	43.9	64	0	11.4	107	64.5	-0.1	-3.3	2	1		MJ						MJ MJ
17-832		63.8	43.7	57	0	11.5	105	63.5	0.2	-1.8	1	1		MJ						MJ MJ
18-1143		63.8	44.8	69	0	11.5	110	64.8	-0.3	-2.8	1	1		MI						MJ MI
19-1144		61.4	40.8	63	0	12.2	109	63.0	-0.6	-3.6	1	1		MJ						MI MJ
20-1148		64.1	46.5	71	0	11.8	114	62.7	-0.4	-5.2	0	1		MI						MI MJ
21-2012		62.9	47.4	76	0	12.5	106	61.0	-1.1	-1.8	1	1		MI						MI MJ
22-2013		64.2	47.4	78	0	12.2	98	61.7	-0.4	-2.8	2	1		MI						MI MJ
23-2014		63.4	46.9	73	0	11.9	111	61.7	-0.2	-3.6	1	1		MI						MI MJ
24-2016		63.4	42.9	62	0	12.2	107	63.9	-0.5	-2.0	1	1		MJ						MI MJ
25-2017		63.6	43.3	61	0	12.4	106	63.5	-1.1	-1.0	1	1		MJ						MI MJ
26-2020		63.5	51.5	83	0	11.4	107	63.9	-0.2	-2.7	2	1		MJ						MJ MJ
27-2023		63.4	49.3	85	0	11.9	113	63.5	-0.8	-1.9	2	1		MI						MI MJ
28-2024		62.5	49.0	79	0	11.3	104	62.3	-0.3	-3.2	2	1		MJ						MJ MJ
29-2025		63.6	48.5	79	0	12.2	115	61.7	-0.7	-3.6	2	1		MI						MI MJ
30-2026		62.6	49.0	77	0	11.4	107	63.3	0.0	-3.1	2	1		MJ						MJ MJ
MODEC		64.7	46.1	71	0	12.6	103	61.1	-1.1	-2.0	2	2		MI						MJ MJ
TL-75-409		62.9	46.3	65	0	11.4	109	63.1	0.2	-2.6	2	1		MI						MJ MJ
YECORO ROJO		64.3	47.8	82	0	12.7	87	65.1	2.2	-15.0	4	3								MI

DEFICIENCIES
AVG OF STANDARDS 62.0 49.0 0 13.7 68.6
MINOR FAULTING VALUES 59.8 46.9 5 12.5 65.6
MAJOR FAULTING VALUES 58.9 43.9 10 11.5 64.6

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE

QUALITY DATA OF DURUM SAMPLES 1992 CROP
STATE-CALIFORNIA STATION=TULELAKE NURSERY=PRELIMINARY

TABLE 35

VARIETY	STD	TEST		1000		SIZING		WHT		HARD		SEMO		DUST		MIXO	SCORE		DEFICIENCIES			
		WT	#/BU	K.WT	G.	LG	SM	PRO	14%	NESS	EXTR	%	%	L	COLOR		***	TW	KW	SM	WP	SX
ND VIC	S	62.0		49.0		70	0	13.7		130		67.3		0.0	0.0	6	4					
TL73-25		62.2		43.9		56	0	11.7		105		59.7		-0.1	-5.8	2	1		MJ		MI	MJ
TL73-91		62.9		44.4		67	1	11.5		109		62.0		-0.7	-3.0	1	1		MI		MJ	MJ
TL75-409(2)		61.6		41.5		63	1	11.4		110		58.6		0.1	-4.5	1	1		MJ		MJ	MJ
TL75-409(3)		63.0		52.4		86	0	12.3		117		53.6		0.8	-4.7	1	1				MI	MJ
TL80-1045		60.5		46.3		.	.	12.0		119		.		.	.	.	3				MI	MI
TL80-1057		63.1		49.8		70	0	11.8		111		63.9		-0.4	-2.0	0	2				MI	MI
TL80-1097		62.7		48.5		.	.	12.8		111		.		.	.	.	4				MI	MI
TL80-1102		62.6		46.7		73	0	11.9		115		54.8		0.6	-3.7	1	1		MI		MI	MJ
TL80-1107		64.3		47.4		83	0	12.5		89		67.0		2.3	-16.5	4	3				MI	MI
TL80-1253		60.5		43.1		63	0	10.4		99		61.8		0.5	-5.3	1	1		MJ		MJ	MJ
TL81-1515		64.9		48.1		83	0	12.2		81		67.5		2.5	-16.6	5	3				MI	MJ
TL81-1527		64.7		53.2		89	0	11.6		105		62.7		-0.7	-3.8	1	1				MI	MJ
TL81-1532		62.6		51.3		83	0	11.4		102		49.4		-0.3	-1.7	1	1				MI	MJ
TL82-5		62.2		54.9		83	0	11.9		107		60.8		-0.6	-2.9	1	1				MI	MJ
TL82-48		65.0		45.5		76	0	11.5		100		60.4		-0.3	-2.5	0	1		MI		MJ	MJ
TL82-49		64.6		50.0		83	0	11.6		122		56.9		0.7	-3.0	0	1				MI	MJ
TL82-50		65.7		47.4		83	0	13.0		77		65.7		3.1	-16.8	5	4				MI	MJ
TL82-56		62.0		44.6		46	1	12.3		118		60.9		-0.7	-4.1	2	1		MI		MI	MJ
TL82-57		60.9		43.1		40	1	13.1		114		59.9		-1.7	-4.4	2	1		MJ		MI	MJ
TL82-71		63.2		49.3		71	0	11.9		117		58.1		0.8	-2.7	0	1				MI	MJ
TL82-72		63.5		50.3		78	0	11.5		110		58.2		1.3	-3.8	0	1				MI	MJ
TL82-74		64.2		44.8		71	0	12.2		113		62.5		-0.8	-1.9	0	1		MI		MI	MJ
TL82-100		61.6		44.1		67	0	12.5		116		53.6		0.5	-1.2	3	1		MI		MI	MJ
TL82-111		64.9		47.6		76	0	11.3		108		62.5		-0.3	-2.2	1	1				MI	MJ
TL82-113		63.5		43.9		61	0	12.4		106		61.9		-1.2	-3.2	2	1		MJ		MI	MJ
MODOC		64.7		44.2		69	0	12.4		109		61.1		-1.2	-1.1	2	1		MI		MI	MJ
TL75-409		65.1		42.4		64	0	12.8		114		60.5		-1.2	-0.4	2	1		MJ		MI	MJ
YECORO ROJO		63.0		46.3		70	0	12.1		115		62.3		-0.4	-0.9	2	1		MI		MI	MJ

DEFICIENCIES TW KW SM WP SX
AVG OF STANDARDS 62.0 49.0 0 13.7 67.3
MINOR FAULTING VALUES 59.8 46.9 5 12.5 64.3
MAJOR FAULTING VALUES 58.9 43.9 10 11.5 63.3

***EVALUATION 1=NO PROMISE, 2=LITTLE PROMISE, 3=SOME PROMISE, 4=GOOD PROMISE
*TL 80-1045, TL 80-1097: NOT ENOUGH SAMPLE TO PROCESS FURTHER

